Air Sparge Pilot Test Completion Report
Hanson Aggregates Mission Valley Rock Facility
7999 Athenour Way
Sunol, Alameda County, California

March 28, 2008
001-09480-06

Prepared for
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March 28, 2008

Mr. Jerry Wickham
Alameda County Health Care Services
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: **Air Sparge Pilot Test Completion Report, Hanson Aggregates Mission Valley Rock Facility, 7999 Athenour Way, Sunol, Alameda County, California, SLIC Case #RO0000207 and GeoTracker ID T0600102092**

Dear Mr. Wickham:

The enclosed report entitled "Air Sparge Pilot Test Completion Report" was prepared by LFR Inc. (LFR) on behalf of Hanson Aggregates Northern California for the asphalt plant area of the Hanson Aggregates Former Mission Valley Rock Facility, located at 7999 Athenour Way, Sunol, California ("the Site"). The scope of work for the air sparge pilot test ("the pilot test") was conducted in accordance with the August 3, 2007 work plan approved by Alameda County Environmental Health in its technical comment letter dated August 30, 3007.

This report presents the methodology and results of the pilot test conducted at the Site during January and February 2008 to assess the feasibility of injecting air into the saturated subsurface as a means of accelerating the degradation of petroleum hydrocarbons that have affected groundwater beneath the Site. Prior to the start of the pilot test, three sparge wells and four soil-gas monitoring probes were installed south of existing monitoring well cluster MW-9, and a temporary air sparge system was installed. The pilot test consisted of several short-duration (up to several hours in length) sparge tests, including helium tracer tests, during which groundwater quality and pressure were measured in monitoring wells and soil-gas concentrations were monitored. In addition, one approximately two-week-long continuous sparge test was completed, at sparge rates and pressures selected based on the results of the initial short-duration sparge tests. Groundwater and soil-gas samples were collected before, during, and/or following the pilot test, for laboratory analyses including organic and inorganic concentrations and microbial population counts.

Results of the pilot test indicate that effective delivery of oxygen into the "S", "D," and "LF" groundwater depth intervals can be achieved using a conventional air sparging approach, and that a significantly large radius of influence (approximately 35 feet) can be achieved. LFR recommends that air sparging be conducted in the source area using existing sparge wells OXY-1D/LF, and that a groundwater monitoring program be developed to monitor the natural attenuation of petroleum hydrocarbons in groundwater beneath the Site, using the existing groundwater monitoring well network at the Site.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached Work Plan are true and correct to the best of my knowledge.

If you have any questions or comments concerning this report, please call me at (925) 426-4170 or Katrin Schliewen of LFR at (510) 652-4500.

Sincerely,

Lee W. Cover
Environmental Manager
Hanson Aggregates Northern California

Attachment

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FIGURES

APPENDICES

CERTIFICATION

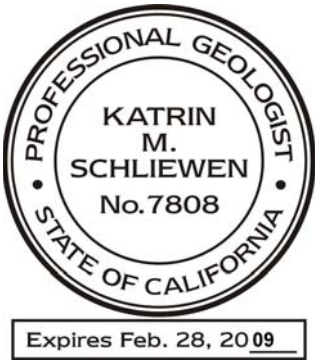
LFR Inc. has prepared this "Air Sparge Pilot Test Completion Report" to describe work conducted in the asphalt plant area of the Hanson Aggregates Mission Valley Rock Facility in Sunol, California, on behalf of Hanson Aggregates Northern California, in a manner consistent with the level of care and skill ordinarily exercised by professional engineers and geologists. This report was prepared under the technical direction of the undersigned California Professional Engineer and California Professional Geologist.*

March 28, 2008

E. Max MacLeod, P.E. — Date
Senior Project Engineer
California Professional Engineer No. C69846

March 28, 2008

Katrin M. Schliewen, P.G. — Date
Senior Hydrogeologist
California Professional Geologist No. 7808



* A registered geologist's or registered engineer's certification of conditions comprises a declaration of his or her professional judgment. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations, and ordinances.

1.0 INTRODUCTION

LFR Inc. (LFR) has prepared this "Air Sparge Pilot Test Completion Report" on behalf of Hanson Aggregates Northern California ("Hanson") for the asphalt plant area of the aggregate mining facility located at 7999 Athenour Way in Sunol, Alameda County, California ("the Site"; Figure 1). The objective of the air sparge pilot test ("the pilot test") was to assess the feasibility of injecting air into the saturated subsurface as a means of accelerating the degradation of petroleum hydrocarbons that have affected groundwater beneath the Site.

Field activities for the pilot test were performed in accordance with the "Work Plan to Conduct a Groundwater Remediation Pilot Test at the Asphalt Plant and Additional Subsurface Investigation in the Former Diesel Spray Area" ("the Work Plan"), submitted to Alameda County Environmental Health (ACEH) on August 3, 2007 (LFR 2007b). ACEH approved the Work Plan in its letter titled "Fuel Leak Case No. RO0000207 and Geotracker Global ID T0600102092, Mission Valley Rock and Asphalt, 7999 Athenour Way, Sunol, CA 94586," dated August 30, 2007 (ACEH 2007b).

Field investigation activities included:

- installing three air injection ("sparge") wells and a temporary air sparging system;
- conducting several specific sparge and helium gas tracer tests, including performance monitoring during those tests;
- installing four soil-gas probes to monitor for hydrocarbon concentrations in soil gas during sparging; and
- collecting baseline and post-test groundwater and soil-gas samples for laboratory analyses.

This report is organized as follows: Section 2.0 presents a summary of the site history, investigations conducted to date, ACEH requirements, and pilot test objectives. Section 3.0 summarizes the objectives and approach of the pilot test. Section 4.0 describes the activities completed prior to conducting the pilot test, including the well and probe installations and baseline and post-test groundwater and soil-gas sampling. Section 5.0 describes the methods used to conduct the pilot test. Section 6.0 presents and discusses the results of the sparge test. Section 7.0 summarizes the conclusions developed based on the pilot test results and presents recommendations for further remedial action for the Site. A list of relevant document references is provided in Section 9.0.

2.0 HISTORY OF POTENTIAL ENVIRONMENTAL IMPACTS AND PREVIOUS INVESTIGATIONS

The following sections provide a summary overview of the site history and relevant site conditions. A more detailed presentation of this information is provided in the Site Conceptual Model (SCM), which was presented in Appendix A of the "Site Assessment Report of Additional Lateral and Vertical Characterization and Plan for Interim Remediation at the Asphalt Plant" report submitted on April 10, 2007 ("the Characterization Report"; LFR 2007a).

2.1 Site Description

The asphalt plant is located near the center of the approximately 588-acre property, which has been owned and operated by Hanson since early 2005 (Hanson Aggregates Mission Valley Rock Facility ["the Hanson-Sunol facility"]). The property previously was owned and operated by Mission Valley Rock Company since the 1950s. The Hanson-Sunol facility is operated as a sand and gravel quarry with an asphalt manufacturing facility and ready mix concrete plant. Additionally, various areas throughout the property are leased for industrial, agricultural, and storage purposes.

2.2 Site Geology and Hydrogeology

In summary, sediments beneath the Site consist of approximately 10 to 20 feet of relatively less permeable silts, clays, and clayey gravels overlying approximately 20 to 30 feet of relatively more permeable fine- to coarse-grained gravels considered to be the main water-bearing stratum. The Livermore Formation, which underlies the main water-bearing stratum, appears to be somewhat less permeable compared to the overlying strata due to increased fines content encountered at approximately 30 to 40 feet below ground surface (bgs).

The depth to groundwater beneath the Site typically ranges from 2 to 6 feet bgs. Groundwater flow conditions in the vicinity of the Site are influenced by low-permeability features, such as the former gravel pits filled with relatively less permeable, finer-grained sediment, and by variable groundwater removal from adjacent former mining pits. The local flow direction generally has been to the south, southeast, and east, as measured in site groundwater monitoring wells since approximately 1998. Historically, including during the period of underground storage tank (UST) operations, the groundwater directions likely would have been toward nearby open gravel pits, for example to the east or west. Historically, the groundwater table likely rose and fell significantly as nearby aggregate mining pits were advanced, dewatered, and later filled with water and silt.

2.3 History of Potential Environmental Impacts

The asphalt plant has been in operation since approximately 1980. Operation from 1980 to 1996 included the use of two 10,000-gallon diesel fuel USTs and one 2,000-gallon gasoline UST with fuel dispenser used to fuel company vehicles. During the removal of these three USTs in June 1996 by Tank Protect Engineering (TPE 1996), an impact to soil and groundwater was found. The USTs were found to be in good condition with no holes evident, although a ¼-inch-diameter hole was observed in one of the fuel lines. Several subsurface investigations have been completed by LFR and other consultants from 1996 through the present in the vicinity of the asphalt plant.

A fourth 10,000-gallon diesel tank (designated "D-4") was located approximately in the southeastern portion of the Site and apparently was a partially buried tank. D-4 reportedly was abandoned and removed and is not believed to have released significant quantities of petroleum hydrocarbons to the environment.

According to a longtime employee at the facility who is familiar with the history of the Site, a fifth diesel UST, estimated to have been approximately 8,000 to 10,000 gallons in size, was located in the southern portion of the Site, approximately beneath the two existing 25,000-gallon asphalt cement aboveground storage tanks (ASTs). This fifth diesel UST reportedly was used for a few years before being abandoned in place (likely filled with cement) during the 1970s, before the asphalt plant was built. No other USTs or ASTs are reported to have existed at the Site since approximately 1970. The existing 25,000-gallon ASTs contain asphalt cement and therefore are not considered a potential source of fuel hydrocarbons detected in the subsurface. The approximate locations of all known current and former USTs or ASTs are shown on Figure 2.

2.4 Previous Environmental Site Investigations and Agency Determinations

Several investigations have been completed in the vicinity of the Site by other consultants since the three USTs were removed. The locations of temporary soil borings and abandoned and existing groundwater monitoring wells advanced or installed since investigations began at the Site are shown on Figure 2.

Previous investigations have included the advancement of approximately 17 temporary soil borings, and installation and monitoring of 27 groundwater monitoring wells (one well has been abandoned; currently there exist 26 groundwater monitoring wells). The most recent groundwater monitoring wells (well clusters MW-9 through MW-12, installed during April and May 2006) were completed to depths designated as shallow ("S", screened approximately from 5 to 10 feet bgs), deep ("D", screened approximately between 15 and 25 feet bgs), and Livermore Formation ("LF", screened approximately from 35 to 40 feet bgs and believed to be approximately within the top 5 to 10 feet of the Livermore Formation). These depth designations have been used to describe the screened intervals for other previous monitoring wells.

Based on the results of previous investigations and monitoring, ACEH concurred with LFR in an April 27, 2007 letter that no additional characterization investigations are necessary for this Site, and requested that a scope of work be submitted to implement pilot testing of the proposed remedial alternative (ACEH 2007a). In its April 27, 2007 letter, ACEH also commented that air sparging may not be the sole remedial technology for this Site.

In response to ACEH, LFR submitted the Work Plan on August 3, 2007. ACEH approved the proposed scope of work in an August 30, 2007 letter, provided that specific technical comments are incorporated in the pilot test (ACEH 2007b). LFR conducted the pilot test during January and February 2008 in accordance with the Work Plan and ACEH comments.

2.5 Known Impacts to Groundwater

Results of previous investigations and groundwater monitoring events have revealed that groundwater beneath the Site is affected by elevated concentrations of petroleum hydrocarbon compounds. The primary constituents of concern in groundwater beneath the Site include total petroleum hydrocarbons (TPH) as gasoline (TPHg), TPH as diesel (TPHd), the fuel oxygenate methyl tertiary-butyl ether (MTBE), and benzene.

Occurrence of free product at the Site generally has been limited to sporadic sheen observed during routine quarterly monitoring events in wells MW-3, MW-9D, and MW-11D, and in former well MW-2. The presence of free product was observed in soil cores during the drilling of wells MW-9D and MW-11D. Measurable free-product thickness has been observed only in former well MW-2, during June 1998 through June 2002, at thicknesses up to approximately 0.5 foot.[1]

As described in the SCM, the rise and fall of the groundwater table resulting from dewatering of mine pits is believed to have created a petroleum hydrocarbon "smear zone" in the sediment column. In addition, variable groundwater flow directions over time appear to have expanded the lateral distribution of hydrocarbons in groundwater beneath the Site. Based on groundwater monitoring results where concentrations of certain compounds have reached saturation levels, small areas of free product possibly remain trapped in soil below the water table within the smear zone, in particular within the interval labeled as the "deep" interval.

[1] Two anomalous free product thickness measurements were recorded, namely 0.9 foot in March 2002 and 4 feet in January 1999.

Historically, the highest TPH concentrations have been detected in the following wells:

- Former well MW-2. TPHd has been detected in former well MW-2 at concentrations ranging up to 610,000 micrograms per liter (μg/L; March 2001). The highest TPHg and TPHd concentrations detected in this well generally correlated with observations of free product in this well.
- Well MW-7D. TPHg and TPHd concentrations have been detected in well MW-7D at concentrations up to 1,300,000 μg/L and 150,000 μg/L, respectively (December 2005).
- Well MW-9D. TPHg has been detected in well MW-9D at concentrations up to 210,000 μg/L (February 2007).
- Well MW-11D. TPHd has been detected in well MW-11D at concentrations up to 210,000 μg/L (September 2006).

In general, the highest TPHg concentrations have been detected in wells located in the northern portion of the Site while the highest TPHd concentrations have been detected in wells located in the southern portion of the Site. MTBE has been detected at concentrations ranging up to 410 μg/L (well MW-6S in August 2005), but generally is detected at concentrations less than approximately 20 μg/L and typically is detected only in wells located in the southern portion of the Site.

2.6 Source of Impacts and Migration in Groundwater

The historical presence of several USTs containing diesel or gasoline at the Site are the suspected source(s) of the petroleum hydrocarbons and related compounds detected in groundwater beneath the Site. Two large diesel USTs and one relatively small gasoline UST were located in the northern portion of the Site, and one diesel UST is thought to have been located in the southern portion of the Site (now beneath the existing 25,000-gallon ASTs). One or more of the former diesel USTs may have contributed to the current distribution of TPHd in groundwater beneath the Site.

The former gasoline UST was in use approximately from 1980 to 1996. The addition of MTBE as a fuel oxygenate to gasoline was not typical before approximately the early 1990s. The relative distribution of TPHg and MTBE (the highest TPHg concentrations have been detected in wells located primarily in the northern portion of the Site, and MTBE has been detected primarily in the southern portion of the Site) raises the question of whether more than one source of gasoline fuel may have existed. However, there is no supporting evidence for an unknown second former gasoline UST historically in use at the Site. The relative distribution of TPHg and MTBE is better explained by a combination of leaks from the gasoline UST occurring over a long period of time, small pockets of free-phase gasoline remaining trapped in soil particles in the vicinity of the former gasoline source in the northern portion of the Site, and dissolved (relatively soluble) MTBE migrating in a southerly direction along with the

predominant local groundwater flow direction (as measured in groundwater monitoring wells since approximately 2000).

3.0 PILOT SPARGE TEST OBJECTIVES AND APPROACH

The primary objective of the pilot test was to assess the feasibility of injecting air into the saturated subsurface as a means of accelerating the degradation of petroleum hydrocarbons that have affected groundwater beneath the Site.

This objective was met through the completion of the following tasks:

- Three sparge wells were installed in the vicinity of well cluster MW-9 with well screens at three depths slightly deeper than the three MW-9 wells.
- Four soil-gas monitoring probes were installed in the vadose zone (approximately 3.5 to 4 feet bgs) to monitor soil-gas concentrations during the pilot test.
- Baseline (pre-test) and post-pilot test groundwater samples were collected for laboratory analyses. Groundwater samples were analyzed for petroleum hydrocarbons, inorganic biodegradation indicator parameters, and microbial population counts.
- Soil-gas samples were collected under sparge and post-sparge conditions for laboratory analyses and analyzed for petroleum hydrocarbon concentrations.
- A temporary air sparge system was installed to inject air into the sparge wells.
- A series of short-term sparge tests (air entry and step tests) were conducted at varying air entry pressures to test feasible air injection rates and pressures.
- A longer-term continuous sparge test was conducted using an injection pressure selected based on the results of he step tests.
- Helium tracer tests were conducted during air sparging to estimate the radius of influence (ROI).
- Groundwater pressure (elevation) and general water-quality parameters, including dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, and temperature, were monitored in selected nearby groundwater monitoring wells during the air sparge tests to estimate the ROI and monitor geochemical changes favorable to the degradation of petroleum hydrocarbons.

These tasks were completed as described in the following sections. Note that, due to field conditions (including the presence of underground utilities and proximity of existing structures), the locations of the sparge wells and soil-gas probes were modified slightly from the locations proposed in the Work Plan. In addition, the scope of the proposed pilot test was modified during the various sparge tests as necessary and based on field conditions and preliminary results. Where possible, additional monitoring was conducted and data were collected during the pilot test.

4.0 PRE-SPARGE TEST ACTIVITIES

4.1 Pre-Field Activities

4.1.1 Permitting

LFR acquired the appropriate drilling permits for the installation of three sparge wells and four soil-gas monitoring points from the Alameda County Zone 7 Water Agency.

4.1.2 Subsurface Utility Clearance

Prior to intrusive fieldwork, subsurface utility clearance was obtained by utilizing a private utility locator, Underground Service Alert (USA), and historical utility records. LFR notified USA the required 72 hours prior to commencing drilling to identify public underground utilities located in the vicinity of the proposed soil boring locations. LFR also subcontracted C. Cruz Subsurface Locators Inc. of Milpitas, California, to perform subsurface utility locating at the Site to identify possible subsurface obstructions and utilities. All proposed drilling locations were cleared.

4.1.3 Health and Safety Plan

An existing site-specific Health and Safety Plan (HSP) previously prepared for the well installation work conducted by LFR at the Site during 2006 and 2007 was updated and amended with additional sections added for work related to the sparge system (sections 6.13, 6.14, and 6.15 addressing the issues of safety when working with compressed gas cylinders, hand tools, and air sparge system machinery, respectively). The new HSP (dated January 18, 2008) documents the potential hazards to worker health and safety at the Site during pilot test field activities and specifies the appropriate means to mitigate or control these hazards. The HSP addresses the potential for exposure to hazardous constituents and describes general safety procedures.

A tailgate health and safety meeting was conducted by LFR personnel each day prior to commencing fieldwork. In addition, LFR and its subcontractors attended the on-site health and safety training conducted by facility personnel as required by Hanson.

4.2 Sparge Well and Soil-Gas Sampling Point Installation

The three air sparge wells (OXY-1S, OXY-1D, and OXY-1LF; Figure 2) were installed approximately 10 feet south of monitoring well cluster MW-9. The OXY-1 well cluster was located in close proximity to well cluster MW-9 to assess for near-injection responses during the pilot test. The sparge wells were located approximately 28 to 84 feet from monitoring wells MW-1, MW-2S/M/D, MW-7S/D, and MW-8, which were used as additional groundwater monitoring locations at farther distances from the sparge wells.

The soil-gas monitoring probes were located in a linear configuration approximately 5 to 25 feet from the center of the sparge well cluster, to enable soil-gas monitoring above the sparging area.

4.2.1 Sparge Well Installation and Development

LFR subcontracted Cascade Drilling of Rancho Cordova, California, a California-licensed drilling subcontractor, to drill, install, and develop the three new sparge wells, OXY-1S, OXY-1D, and OXY-1LF, during January 22-25, 2008, under the oversight of an LFR field geologist. Each soil boring was advanced to a depth of approximately 5 feet bgs using a hand auger, and was drilled to a total depth using an 8-inch-diameter hollow-stem auger drill rig. The total depths of the sparge wells were targeted to at least 5 feet below the bottom of the well screen intervals in well cluster MW-9, to approximately 17, 32, and 45 feet bgs, for the shallow (S), deep (D), and Livermore Formation (LF) intervals, respectively.

Continuous soil cores were collected during drilling, and the soil cores were visually logged and screened in the field using a photoionization detector (PID) to assess for the presence of petroleum hydrocarbons. The LFR field geologist classified the soils encountered using American Society for Testing and Materials D 2488-00, based on the Unified Soil Classification System. Lithologic soil descriptions and field screening results were recorded on field boring logs, copies of which are included in Appendix A.

Soils encountered during boring advancement generally consisted of lean clay to approximately 7 or 8 feet bgs, underlain by sandy silt to approximately 9 to 12 feet bgs. Relatively coarse-grained silty gravels with minor intervals of silty sands were encountered from the sandy-silt interval to the total depth of each boring. Petroleum odor and elevated PID readings were recorded in soil cores from borings OXY-1S and OXY-1D, from approximately 15 feet bgs to the total depth of boring OXY-1D (approximately 32 feet bgs). Light petroleum odor and greenish-gray staining were noted in the soil core during drilling for boring OXY-1LF between approximately 15 and 25 feet bgs, although no significant PID readings were recorded in that boring.

Each sparge well was constructed using 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) well casing and 2-foot-long, machine-slotted Schedule 40 PVC well screens with a 0.020-inch slot size. Well screen filter packs consisting of #2/16 clean silica sand were placed in the borehole annular space around each well screen interval and extended to approximately 1 foot above the top of the screen. Coated bentonite pellets were placed in the annular space to approximately 5 feet above the filter packs; uncoated bentonite chips were placed in the annular space to approximately 10 feet bgs. The longer than normal bentonite seal was installed to reduce the potential for cement grout to migrate to an adjacent sparge well screen interval. The annular space above the bentonite seal was filled with cement grout to just below the ground surface.

Each sparge well was equipped with a locking well cap. The surface completions consist of 8-inch–diameter, flush-mounted metal well vaults secured in thick concrete and equipped with a traffic-rated bolted cover. Well completion details are included on the field boring logs in Appendix A.

4.2.2 Soil-Gas Probe Installation

The four soil-gas monitoring probes (SG-1 through SG-4; Figure 2) were installed on January 23, 2008, by hand augering to the target depth of approximately 3.25 feet bgs. The target depth was determined based primarily on the depth to groundwater measured in nearby shallow groundwater monitoring wells MW-1, MW-7S, MW-8, and MW-9S (approximately 3.5 to 4.1 feet bgs).

Each soil-gas probe was constructed from ¾-inch-diameter Schedule 40 PVC well casing with 0.5-foot-long well screens. The bottom of each probe was capped, the annular space around the screen was filled with clean silica sand to approximately 2 inches above the screen, and the remaining annular space was filled with hydrated uncoated bentonite chips to ground surface. The probe casing was capped and sealed using a ball valve fitted with a ¼-inch-diameter hose barb. Traffic cones were used to protect the probes during the sparge test (Appendix B; Photograph 4).

During the drilling for the soil-gas probes, silty gravel fill was encountered from ground surface to approximately 1.8 feet bgs and lean clay was encountered to the total depth of the probe borings.

4.3 Equipment Decontamination and Waste Handling

Drilling and sampling equipment were properly decontaminated before each use and between each location. Groundwater samples were collected using either dedicated or single-use, disposable sampling devices such as tubing or bailers.

Waste soil and water generated during the field activities were contained in 55-gallon steel drums temporarily stored at the Site pending wastewater characterization and appropriate disposal.

4.4 Field Documentation

Field activities were appropriately documented using field forms to document health and safety tailgate meeting attendance and daily field activities, and included soil boring logs, well development forms, groundwater purging and sampling forms, and chain-of-custody forms. Copies of relevant field forms are included in the appendices of this report. All forms are kept on file at LFR and are available upon request.

5.0 AIR SPARGE PILOT TESTING SEQUENCE

The pilot test was completed in a sequence of four air sparging tests, as follows:

Test Sequence 1: Initial Air Entry (Breakthrough) Tests were performed on individual sparge wells to determine what pressures may be required to inject air into the formation.

Test Sequence 2: Pressure/Flow Step Tests were performed on individual sparge wells to select the preferred injection pressure and flow for the longer-term test, and to collect groundwater elevation response, DO, and other general water-quality data used to infer the ROI.

Test Sequence 3: Helium Tracer Tests were performed on each of the sparge wells as a direct indicator of ROI.

Test Sequence 4: A Continuous Sparging Test was performed by sparging air simultaneously into wells OXY-1D and OXY-1LF for approximately two weeks to assess contaminant removal and microbial population response to sparging.

A different monitoring regime was used for each test sequence to gauge the magnitude and reach of the response in the aquifer. The testing and monitoring performed included using pressure transducer devices in existing groundwater monitoring wells that also measured general water-quality parameters, and monitoring soil-gas concentrations in the headspace of groundwater monitoring wells and soil-gas probes for both hydrocarbons and helium gas. Pre- and post-sparge test groundwater samples were collected for laboratory analyses including microbial population counts. Soil-gas samples were collected during sparging and after the pilot test. The equipment used and monitoring techniques employed are discussed below.

5.1 Air Sparging and Monitoring Equipment

Air Compressor

An Ingersoll Rand™ air compressor (Model 2475N5.0-FP), driven by a 5-horsepower, single-phase 230-volt motor, was used as the air source for air injection into the three sparge wells (Appendix B; Photograph 1). The compressor was capable of providing a range of flow rates and pressures up to a maximum manufacturer-specified capacity of 17 standard cubic feet per minute (scfm) at 40 pounds per square inch gauge pressure (psig). The compressor was mounted to an 80-gallon air tank and a manifold with three distribution points, each outfitted with individual pressure gauges, ball valves, and flow meters (Appendix B, Photograph 2).

Data-Logging Transducers

Seven data-logging transducers (In-Situ TROLL® 9500) were placed in nearby monitoring wells to monitor groundwater pressure (equated to depth to groundwater) over time. The transducers also measured general water-quality parameters, including pH, temperature, DO concentration, and oxidation-reduction potential (ORP). The transducers were set to measure each parameter at 45-second intervals, and the data were recorded on data loggers for later retrieval. The transducers were used to actively record data during the breakthrough tests, the step tests, the helium tests, and the first three days of the continuous sparge test. Data were periodically uploaded to a laptop computer in the field to review and evaluate preliminary results (Appendix B; Photograph 3). The seven transducers were initially installed in wells MW-1, MW-7S/D, MW-8, and MW-9S/D/LF; the transducers in wells MW-9S/D/LF were moved to wells MW-2S/M/D as field conditions necessitated capping the MW-9 well cluster wells to contain increased pressures in these wells. Graphs of the data logged by each transducer are presented in Appendix C.

Helium Detector

A helium detector (Marks Products model MGD 2002) was used to monitor for the presence of helium gas in the headspace of selected monitoring wells and soil-gas monitoring probes during the Helium tracer tests. The helium detector had a minimum detection limit of 25 parts per million (ppm); when helium concentrations exceeded 20,000 ppm (2% by volume), the detector displayed concentrations as a percentage by volume.

Photoionization Detector

The headspace of selected groundwater monitoring wells and soil-gas probes was also screened periodically for the presence of petroleum hydrocarbons or other volatile organic compounds using a RAE Systems model MiniRAE 2000 PID. The PID measurements were made by removing the well cap and placing the PID intake nozzle into the headspace and recording the highest PID reading displayed within the first few seconds.

5.2 Conducting the Pilot Test

During the pilot test, air was sparged into each of the three sparge wells (OXY-1S, OXY-1D, and OXY-1LF) on an individual basis, and also simultaneously into the two deepest sparge wells (OXY-1D and OXY-1LF). Monitoring during the pilot test was conducted in existing groundwater monitoring wells located within approximately 40 feet of the sparge wells (MW-1, MW-7S/D, MW-8, and MW-9S/D/LF) and in the four soil-gas monitoring probes (SG-1 through SG-4). Monitoring also was conducted in wells MW-2S/M/D located approximately 80 feet from the sparge wells.[2] A summary of the pilot test monitoring network is provided in Table 5.2A below.

[2] Monitoring in wells MW-2S/M/D was not included in the Work Plan. These wells were monitored after wells MW-9S/D/LF showed a significant and sustained pressure response.

Table 5.2A. Monitoring Well Network

Well Type	ID	Approximate Distance from Center of Sparge Well Cluster (feet)	Approximate Screened Interval (feet bgs)	Zone(s) Screened	Monitoring Parameters
Air Sparge Wells	OXY-1S OXY-1D OXY-1LF	3 3 3	15 – 17 30 – 32 42.5 – 44.5	Shallow Deep LF	Air injection pressure and flow rate, general water quality, analytical geochemistry
Groundwater Monitoring Wells	MW-1	35	5 - 20	Shallow	Water pressure, helium, headspace, general water quality, analytical geochemistry
	MW-2S MW-2M MW-2D	84	3 - 8 14 -19 25 - 30	Shallow Medium Deep	Water pressure, helium, headspace, general water quality
	MW-7S MW-7D	28 28	5 - 8 20 - 25	Shallow Deep	Water pressure, helium, headspace, general water quality, analytical geochemistry, microbial populations (MW-7D)
	MW-8	37	5 - 15	Shallow	Water pressure, helium, headspace, general water quality, analytical geochemistry
	MW-9S MW-9D MW-9LF	24 17 10	5.3 - 12.3 18.9 - 23.9 33.3 - 38.3	Shallow Deep LF	Water pressure, helium (MW-9S), general water quality, analytical geochemistry, microbial populations
Soil-Gas Monitoring Probes	SG-1 SG-2 SG-3 SG-4	6 15 26 29	2.75 - 3.25 2.75 - 3.25 2.75 - 3.25 2.75 - 3.25	Vadose Vadose Vadose Vadose	Helium, headspace, analytical geochemistry

The sequence of activities completed during January 28 through February 20, 2008 to conduct the pilot test is provided in Table 5.2B below.

Table 5.2B. Sequence of Pilot Test Activities

Date	Description of Pilot Test Activity
1/21/08 to 1/25/08	• Installed sparge wells OXY-1S/D/LF and soil-gas probes SG-1 through SG-4. • Conducted baseline groundwater sampling of wells MW-1, MW-7S/D, MW-8, MW-9S/D/LF, and OXY-1S/D/LF. • Baseline soil-gas sampling could not be conducted because the soil-gas probes were saturated due to recent precipitation and restricted surface-water infiltration.
1/28/08	• Installed transducers in groundwater monitoring wells. • Installed and set up the temporary air sparge system. • Performed initial air entry (breakthrough) tests in each sparge well. Sparge system shut down at end of day.
1/29/08	• Performed pressure/flow step test in well OXY-1D. Sparge system shut down at end of day.
1/30/08	• Conducted helium tracer test in well OXY-1D at gauge pressure of 15 psi and flow rate of 8 scfm. • Performed pressure/flow step test in well OXY-1LF. Sparge system shut down at end of day.
1/31/08	• Conducted helium tracer test in well OXY-1LF at gauge pressure of 22 psi and flow rate of 8.5 scfm. • Performed pressure/flow step test in well OXY-1S. • Conducted helium tracer test in well OXY-1S at gauge pressure of 12.5 psi and flow rate of 8.5 scfm. • Performed pressure/flow step test in wells OXY-1D and OXY-1LF simultaneously and at similar flow rates. Sparge system shut down at end of day.
2/1/08	• Initiated 17-day continuous sparge test by sparging in wells OXY-1D and OXY-1LF simultaneously. Sparge system in continuous operation through 2/18/08.
2/4/08	• Removed transducers from monitoring wells after final data upload; air sparging was not interrupted.
2/18/08	• Collected soil-gas samples from probes SG-3 and SG-4 during sparging (probes SG-1 and SG-2 were saturated and could not be sampled). • Continuous sparge test ended; sparge system shut down. Collected post-test groundwater samples from groundwater monitoring wells MW-1, MW-7S, and MW-8 (located farthest from sparge wells).

Date	Description of Pilot Test Activity
2/19/08	• Collected post-test groundwater sampled from groundwater monitoring wells MW-7D and MW-9S/D/LF. • Collected soil-gas samples from probes SG-3 and SG-4 (probes SG-1 and SG-2 remained saturated and could not be sampled).
2/20/08	• Collected post-test groundwater samples from sparge wells OXY-1S/D/LF. • Pilot test and post-monitoring completed.

5.2.1 Test Sequence 1: Initial Air Entry (Breakthrough) Tests

After installing the temporary air sparge system, three short-duration (less than 20 minutes) initial air entry tests were conducted to determine the minimum air pressure required to induce air flow through the sparge well screens (i.e., air breakthrough). During sparging into each sparge well, flow rates were monitored as increasing pressure was applied to the well. Breakthrough was determined to have occurred when flow began.

Shortly after air sparging was initiated in well OXY-1D, water was observed bubbling and spurting out of monitoring well MW-9D located approximately 15 feet to the north of the sparge well. When the compressor was shut down, the water pressure in well MW-9D decreased. Breakthrough testing in well OXY-1LF yielded a similar overflow response in well MW-9D. After the three breakthrough tests were completed, the transducers in wells MW-9S/D/LF were removed and placed in wells MW-2S/M/D for the duration of the pilot test. Wells MW-9S/D/LF were capped and fitted with pressure gauges, which were periodically monitored.

Monitoring during the breakthrough tests included air pressure and flow monitoring using the manifold gauges, and depth-to-water and general water-quality parameter monitoring from the transducers installed in groundwater monitoring wells. The data collected during the short-duration breakthrough sparge tests provided preliminary indications of the ROI, formation resistance to flow, and achievable flow and pressure rates.

5.2.2 Test Sequence 2: Pressure/Flow Step Tests

Pressure/flow step tests ("step tests") were conducted similarly to the breakthrough tests, using relatively smaller increments of pressure increases and longer periods of injection at each pressure. The step tests were performed on each sparge well individually and simultaneously on the two deeper sparge wells (OXY-1D/LF). During the step tests, the pressure and flow rates were monitored and data were collected from the transducers installed in groundwater monitoring wells and from headspace PID readings.

Data logger transducers placed in seven groundwater monitoring wells were used to record water pressure and general water-quality parameters (temperature, pH, DO, and ORP) during the step tests. The seven wells were located at distances up to approximately 84 feet from the sparge wells (Figures 2 and 3).

5.2.3 Test Sequence 3: Helium Tracer Tests

Helium tracer tests were performed at the end of each pressure/flow step test described above. The presence of the tracer gas in an observation well is considered a direct indication that a monitoring well or probe is located within the ROI of a sparge well because the tracer gas is blended at the compressor manifold and injected with the sparged air. In addition, there are virtually no background levels of helium gas in groundwater; therefore, helium gas detected in monitoring locations is considered to have traveled from the sparge wells to the monitoring wells.

Helium gas from a helium tank fitted with a flow regulator was injected into the compressed air stream and into the piping of the distribution manifold. The mixed helium/air stream flowed through an air flow gauge into a half-inch-diameter conveyance hose connected to a sparge well wellhead with a quick-connect fitting.

Helium tracer tests were performed on each of the three sparge wells. The helium gas concentration injected into the sparge wells was adjusted to achieve a concentration of approximately 20%. Approximately 40 standard cubic feet (scf) of helium gas were injected into well OXY-1S, approximately 70 scf were injected into well OXY-1D, and approximately 110 scf were injected into well OXY-11LF.

Helium gas concentrations emerging in the headspace of nearby groundwater monitoring wells and soil-gas probes were monitored during each helium tracer test using a helium detector capable of reading helium concentrations from 25 ppm to 100%. Where helium concentrations were inconsistent, qualitative observations were made regarding the presence or absence of helium tracer gas. Helium gas measurements were recorded on field logs.

5.2.4 Test Sequence 4: Continuous Sparging Test

The continuous sparging test portion of the pilot test was conducted by sparging air simultaneously into wells OXY-1D and OXY-1LF during February 1 through 18, 2008 (approximately two weeks of continuous sparging).

Initially, the two sparge wells were each operating at a rate of approximately 4.5 to 5 scfm. On February 7, 2008, the flow rate was reduced to approximately 2.5 to 3 scfm in each sparge well in response to observations of continued high-pressure responses in nearby well cluster MW-9. Note that the flow rates cited here have been temperature- and pressure-corrected based on the flow rates observed on the pressure gauges in the field and recorded on field sheets.

The transducers installed in selected groundwater monitoring wells during the breakthrough, pressure/flow, and helium tests remained in placed during the first three days of the continuous test; they were removed on February 11, 2008. Regular operation and maintenance field visits were conducted during the continuous sparge test to monitor pressure and flow rates of the sparge system, to monitor pressure buildup in the three capped monitoring wells (MW-9S/D/LF), and to conduct headspace monitoring using a PID.

5.3 Groundwater Sampling

Before beginning the sparge tests, LFR collected baseline pre-test groundwater samples from seven existing groundwater monitoring wells (MW-1, MW-7S/D, MW-8, MW-9S/D/LF) and from the three new sparge wells (OXY-1S/D/LF) using "low-flow" sampling protocols. These same wells were sampled again after the continuous sparging test (post-test sampling). Groundwater samples were analyzed for general water-quality and biodegradation indicator parameters, petroleum hydrocarbons, and microbial population counts, as described below. Table 1 presents a matrix of the sampling and analyses conducted for baseline and post-test groundwater monitoring.

An electrical peristaltic pump was used to minimize the drawdown during purging. General water-quality parameters were monitored during well purging using an in-line water-quality monitoring device, and groundwater samples were collected after the general water-quality parameters stabilized for three successive readings to approximately within the standard criteria for pH ($\pm$0.1 standard units), electrical conductivity ($\pm$3%), DO ($\pm$10%), and ORP ($\pm$10 millivolts). The groundwater samples were collected using the low-flow pump to pump the water into the appropriate laboratory-supplied groundwater sample containers.

The baseline samples collected from the three sparge wells (OXY-1S/D/LF) were collected using disposal bailers immediately following the well development activities. In addition, due to a field oversight, the baseline samples collected from wells MW-9S/D/LF for dissolved iron were collected the day after low-flow purging was completed, using disposable bailers and without purging the wells a second time. Therefore, these samples should be considered grab groundwater samples.

All sample containers were properly labeled and placed in ice-chilled coolers for transportation under strict chain-of-custody protocol to the analytical laboratories. The samples analyzed for conventional inorganic and organic parameters were sent to Curtis & Tompkins, Ltd., a California-certified analytical laboratory in Berkeley, California. The samples analyzed for microbial populations were sent via overnight courier to RespirTek, a state-certified specialized laboratory in Biloxi, Mississippi.

5.4 Soil-Gas Monitoring

As described in Section 3.2.2, the four soil-gas monitoring probes (SG-1 through SG-4) were installed with 6-inch-long well screens to a total depth of approximately 3.25 feet bgs. At the time the probes were installed, the depth to groundwater measured in nearby groundwater monitoring wells ranged approximately from 3.5 to 4.1 feet bgs. Although the depth to groundwater was below the bottom of the probe screens, the four probes were saturated prior to beginning the sparge test and baseline pre-sparge soil-gas samples could not be collected. Field staff also observed that rainwater puddles remained on the ground surface days after precipitation ceased, indicating that infiltration is slow at the Site. A review of soil boring logs for the three new sparge wells and previous soil borings advanced in the vicinity of the sparge wells confirmed that shallow soils consist generally of clays or silts. It is likely that rainwater infiltrated through preferential flow paths and saturated the coarser-grained filter sand in the annular space of the soil-gas probe screens.

Soil-gas probes SG-1 and SG-2 remained saturated for the duration of all sparge tests, including the 17-day continuous sparge test. Soil-gas probes SG-3 and SG-4 did dry sufficiently to enable collection of soil-gas samples for laboratory analyses on the last day of sparging (i.e., under sparging conditions) and after the sparge system was shut off (post-test conditions).

The soil-gas probes were sampled using a GilAir-5 personal air sampler pump fitted with a low-flow module to allow controlled flow rates of approximately 80 to 140 cubic centimeters per minute (cm^3/min). The soil-gas probes were purged and the pumping rate was calibrated prior to sample collection. The soil-gas samples were collected by using the air pump attached to the sample tube with 1/8-inch-diameter, clean plastic tubing. The soil gas was drawn from the probes through the sample tube containing sorbent material. The pumping rate and duration of the sample collection were carefully monitored to target a sample volume of approximately 2 liters (2,000 cm^3) drawn through the sample tube. The sample collection duration and rate were noted on the chain-of–custody form.

The samples were placed in an ice-chilled cooler and transported under chain-of-custody protocol to Air Toxics Ltd., a state-certified environmental laboratory located in Folsom, California. Soil-gas samples were analyzed for TPHd, TPHg, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and MTBE using EPA Method TO-17.

6.0 PILOT SPARGE TESTING RESULTS

6.1 Test Sequence 1: Initial Air Entry (Breakthrough) Test Results

Results of breakthrough tests performed on each of the three air sparge wells (OXY-1S/D/LF) are summarized in Table 6.1 below. Results from the breakthrough tests indicated that formation resistance was overcome during the tests and that air flow was achieved for each of the three injection wells.

Table 6.1. Breakthrough Pressures and Formation Resistance

Well ID	Depth Top of Screen (ft bgs)	Depth to Groundwater (ft bgs)	Static Water Column (ft)	Theoretical Minimum Breakthrough Pressure (psi)[1]	Observed Initial Breakthrough Test Minimum Flow Pressure (psi)	Formation Resistance to Flow (psi)[2]
OXY-1S	15	3	12	5	5	0
OXY-1D	30	5	25	11	13	2
OXY-1LF	42.5	4.5	38	16	23	7

Notes:
ft bgs = feet below ground surface
psi = pounds per square inch
1 – calculated as 0.43 psi per foot times the height of the water column in feet
2 – calculated as the difference between the theoretical minimum and observed breakthrough pressures

6.2 Test Sequence 2: Pressure/Flow Step Test Results

6.2.1 Evaluation of Flow Rate versus Injection Pressure

The pressure/flow rate data collected during the step test portion of the pilot test are presented in Appendix D. Results indicated that sparging into individual wells at flow rates up to approximately 7 scfm and pressure below approximately 20 psi can be achieved efficiently. This flow rate and pressure are consistent with the relatively high-permeability gravels encountered beneath the Site.

6.2.2 Radius of Influence Estimate from Step Test Transducer Data

Water pressure, temperature, pH, DO, and ORP data collected using in-well transducers are presented graphically for each groundwater monitoring well in Appendix C. Several lines of evidence were used to develop an estimate of the effective ROI from data collected during the step tests, including:

- Water level (water level changes are not in themselves an indication of injected air reaching the observation well screen because air sparging can result in the displacement of water outside of the ROI).
- Temperature (changes in temperature are considered an indirect indicator of influence).
- pH (increased pH values can be a direct indicator of influence)
- DO (increases in DO concentrations are considered a direct indicator of influence)
- ORP (increases in ORP corresponding to increases in DO concentrations are considered a direct indicator of influence)

Based on the evaluation of the transducer data, an approximate ROI was established for sparging simultaneously in wells OXY-1D and OXY-1LF, as presented on Figure 4. The estimated ROI extent shown on Figure 4 was defined primarily using the results from the helium tracer tests, DO concentrations monitored during the step tests, and the microbial population counts (discussed in Section 6.6.3 below). The results from the water pressure monitoring also are qualitatively shown on Figure 4, although this is considered only an indirect indication of the ROI. The results of parameters monitored during the step tests are discussed below.

Water Level Response

The seven monitoring wells equipped with transducers during the step tests showed pressure (water level) responses during each individual step test. Easily identifiable peaks in the water pressure response indicate that all of the monitoring points are hydraulically linked to the sparge wells (Appendix C). Fluctuations in the graphs from the transducer in well MW-7D are a result of high water pressures in this well where water was observed bubbling and spurting out of the well (Appendix B; Photograph 5). As a result, the transducer was removed from well MW-7D three days early and the well was capped to prevent overflow. Well MW-2D, located farthest from the sparge wells (approximately 84 feet), showed clear pressure responses due to sparging, particularly during sparging into the two deeper wells (OXY-1D/LF), although overall it showed the weakest pressure responses.

Temperature Response

The graphs of temperature responses do not uniformly indicate an influence, as was the case with water pressure readings. Temperature responses were recorded in five of the seven wells monitored using transducers, namely wells MW-1, MW-2S/M, MW-7S, and MW-8. The most significant temperature responses were recorded in wells MW-1 and MW-7S.

pH Response

Four of the seven wells monitored using transducers showed changes (typically an increase) in the pH during the step tests, namely in wells MW-1, MW-7S/D, and MW-8. The strongest response was measured in well MW-7S, and no significant responses were observed in wells MW-2S/M/D. The pH increased and remained elevated in wells MW-1 and MW-7S, approximately during the first three days of the continuous sparging test. The pH data suggest that the ROI is greater than approximately 28 feet (the distance from the sparge wells to wells MW-7S/D).

Dissolved Oxygen Response

Five of the seven wells monitored using transducers showed responses in DO concentrations due to sparging, namely wells MW-1, MW-2M, MW-7S/D, and MW-8. The responses observed consisted of increases in the DO concentrations at the start of sparging. Elevated DO concentrations were sustained during the continuous sparge test for approximately two days in well MW-1, and for at least three days in well MW-7S. Only a small and relatively brief DO response was measured in well MW-2M. The DO increase in well MW-8 was relatively low compared to the response in well MW-1, located at a similar distance from the sparge wells; based on these results, well MW-8 appears to be near the outer limit of the ROI. Based in part on the DO responses observed in wells MW-1 and MW-8, the estimated ROI was defined as being approximately 35 feet from the center of the sparge wells (Figure 4).

Oxidation-Reduction Potential Response

Five of the seven wells (MW-1, MW-2M, MW-7S/D, and MW-8) monitored using transducers showed responses in the ORP due to sparging; these results are consistent with the results from the other parameters monitored, including the pH, temperature, and DO concentrations.

6.3 Test Sequence 3: Helium Tracer Test Results

The results of the helium tracer tests are presented qualitatively on Figure 4 to help define the approximate ROI, based on the helium gas concentrations measured in monitoring locations and summarized in Table 6.3 below.

Table 6.3. Helium Tracer Test Results

Monitoring Point	Approximate Distance from Sparge Wells (feet)	Sparging Into OXY-1S	Sparging Into OXY-1D	Sparging Into OXY-1LF
		Highest Helium Detection in Headspace		
SG-1	6	wet	ND <25 ppm	**2,200 ppm**
SG-2	13	**14.6%**	**6.4%**	**7.0%**
SG-3	26	**2.4%**	**2.5%**	trace
SG-4	24	ND <25 ppm	ND <25 ppm	ND <25 ppm
MW-1	35	ND <25 ppm	**5.6%**	**9.6%**
MW-2S	84	NS	ND <25 ppm	ND <25 ppm
MW-2M	84	NS	ND <25 ppm	ND <25 ppm
MW-2D	84	NS	ND <25 ppm	trace
MW-7S	28	**2.6%**	**4.1%**	**9.8%**
MW-7D	28	ND <25 ppm	**5,000 ppm**	**16.1%**
MW-8	37	ND <25 ppm	**1,725 ppm**	ND <25 ppm
MW-9S	24	NS	**8.9%**	NS

Notes:
NS = not sampled
ppm = parts per million (10,000 ppm = 1%)
wet = water to the top of casing, no headspace
trace = possible trace detection, reading unstable
ND <25 ppm = not detected at the instrument's lower limit of 25 ppm

The helium tracer test results indicate that sparging air with helium into sparge well OXY-1D or OXY-1LF resulted in helium gas being detected at significant concentrations in the headspace of groundwater monitoring wells MW-1 and MW-7S/D. Helium tracer gas was detected in wells MW-8 and MW-9S only while sparging into well OXY-1D. The presence of helium gas could not be monitored in wells MW-9D/LF because of excessive water pressures observed in these two wells during sparging.

Helium tracer gas was detected at significant concentrations in soil-gas probes SG-2 and SG-3 while sparging into sparge wells OXY-1S/D, and in soil-gas probe SG-2 while sparging into well OXY-1LF. Helium gas was detected at a low concentration in probe SG-1 while sparging into well OXY-1LF.

The helium tracer test results indicate that wells MW-1, MW-7S/D, and MW-9S are likely to be within the ROI created when sparging into sparge well OXY-1D/LF. Well MW-8 appears to be near the outer limit of the ROI when sparging into well OXY-1D.

6.4 Test Sequence 4: Continuous Sparging Test Results

Monitoring data collected during the continuous sparging portion of the test indicated the following:

- An initial increase in water pressure was observed in all monitoring wells at the start of the continuous sparge test, including in wells MW-2S/M/D located approximately 84 feet from the sparge wells. The increased water pressure generally dissipated in observation wells within approximately six hours after startup.
- The increase in the water pressure and response in water-quality parameters observed in wells MW-2M and MW-8 dissipated after approximately six hours, approximately back to pre-test levels, indicating no significant or lasting effect from sparging in the vicinity of well cluster MW-2 and well MW-8.
- In well MW-1, after initially elevated pH and DO values were recorded for approximately one day, these parameters trended back toward pre-test levels as sparging continued. In contrast, the ORP values recorded increased in response to sparging and remained elevated throughout the test.
- DO concentrations and the ORP values recorded in well MW-7S increased in response to sparging and remained elevated as sparging continued.

6.5 Radius of Influence Estimate and Summary of Sparge Test Findings

An ROI of approximately 35 feet was estimated based on the results from the pilot test, as presented on Figure 4. Several parameters and observations made during the sparge tests were considered to develop a potential ROI, including the water pressure and general water-quality responses measured by the transducers installed in monitoring wells located up to 84 feet from the sparge wells, results from the helium tracer tests, and analytical results from the groundwater sampling conducted before and after the pilot test (these results are discussed in the following sections).

Following is a summary of findings from the various sparge tests:

- A relatively low formation resistance beneath this Site allows for the injection of air at moderate to high flow rates and moderate to low pressures. Steady air sparging flow rates were achieved for wells OXY-1S, OXY-1D, and OXY-1LF.
- Sparging with air that is not enriched with oxygen is effective at raising the DO concentration and ORP in nearby monitoring wells that are screened at the same elevation or higher than the sparge wells.

- An evaluation of the results of the sparge tests indicates that an estimated ROI of approximately 35 feet can be achieved by sparging simultaneously into wells OXY-1D and OXY-1LF.
- During the wet season, groundwater (or perched rainwater) is found at very shallow depths (less than approximately 3 feet bgs in the soil-gas monitoring probes). The presence of water so close to the ground surface eliminated soil-vapor extraction as a viable technology for this Site.
- Aerobic microbial populations in nearby monitoring wells, including specific petroleum hydrocarbon degraders, do increase in response to air sparging.

6.6 Groundwater Analytical Results

Analytical results for the groundwater samples collected under pre-test ("baseline") conditions and after the continuous sparging test was completed ("post-test") are summarized in Tables 2 and 3 and are presented on Figures 5 and 6. Table 2 and Figure 5 present a summary of petroleum hydrocarbon compounds concentrations (TPHg, TPHd, and benzene) for all wells monitored during the pilot test, including the three sparge wells. Table 3 and Figure 6 present a summary of all groundwater analytical data obtained from wells MW-7D, MW-9S, MW-9D, and MW-9LF, and include petroleum hydrocarbon concentrations, inorganic and field parameters, and microbial population counts. Certified laboratory analytical reports are included in Appendix E. Analytical results are discussed below.

6.6.1 Petroleum Hydrocarbons and Related Compounds

The primary petroleum hydrocarbon compounds detected in baseline and post-test groundwater samples are TPHd, TPHg, and BTEX compounds; MTBE was not detected in any sample. The highest concentrations detected were of TPHg in the baseline and certain post-test samples collected from wells MW-7D, MW-9D, and OXY-1S, where concentrations were greater than 10,000 μg/L. The results for the baseline samples are consistent with historical groundwater monitoring results for the northern portion of the Site, where typically TPHg is detected at significantly higher concentrations than TPHd, and where BTEX compounds are detected but where MTBE typically is not detected (see quarterly groundwater monitoring reports and SCM).

A comparison of baseline and post-test TPH results (Table 2 and Figure 5) shows that TPH concentrations essentially remained unchanged in groundwater monitoring wells MW-1, MW-8, MW-9D, and MW-9LF, and notably increased in wells MW-7S, MW-7D, and MW-9S. In contrast, TPH concentrations generally decreased in the samples collected from the three sparge wells (OXY-1S through OXY-1LF). The increases in TPH concentrations observed in certain wells (the relatively shallow wells located less than approximately 30 feet from the sparge wells) likely reflect the upward migration of TPH-affected groundwater due to the effects of sparging air into the "D" and "LF" intervals. As described in the SCM, residual free-phase product are thought

to be "trapped" in soils below the water table. The physical effects of sparging air deep beneath the water table likely caused the mobilization and/or upward migration of free product and/or groundwater affected with elevated TPH concentrations, from the "D" interval upward to the "S" interval.

The general decrease in TPH concentrations in the three sparge wells may be a result of an initial biodegradation of TPH concentrations due to air sparging and the resulting increase in microbial populations and/or physical stripping and removal of those hydrocarbons from the dissolved phase. Longer-term monitoring would be required to confirm whether the apparent decreases are reflective of biodegradation.

These initial results provide promising evidence of potential enhanced biodegradation due to the addition of oxygen into the subsurface.

6.6.2 Inorganic and Field Parameters

A summary of inorganic and field indicator parameters is presented in Table 2 and on Figure 6.

ORP measurements increased significantly in the MW-9 well cluster wells, and somewhat less significantly in well MW-7S located farther from the sparge wells. These ORP results indicate that injection of oxygen during the test resulted in a shift in the aquifer geochemistry toward a more oxidizing condition.

Increases in DO were limited to well MW-9LF (DO increased from less than 1 milligram per liter (mg/L) to approximately 6.4 mg/L). Increases in DO were not observed in the other monitoring wells, including those wells that exhibited an increase in ORP (i.e., wells MW-7D and MW-9S/D). The lack of DO increases in these wells indicates that oxygen delivered to those wells was consumed by aerobic respiration of petroleum hydrocarbons during the pilot test period. This conclusion is supported by the fact that microbial populations increased significantly in wells with elevated hydrocarbon concentrations (i.e., wells MW-9S and MW-9D, see discussion in the following section). In contrast, microbial population increases were not noted in well MW-9LF, which does not have elevated hydrocarbon concentrations. These data indicate that oxygen delivered to well MW-9LF was not consumed by aerobic respiration and accumulated as an increase in DO in the water.

6.6.3 Microbial Population Counts

Results from the microbial population counts (heterotrophic plate counts [HPC] and gasoline-specific degrader counts [SD]) are summarized in Table 3 and on Figure 6, based on the certified analytical reports included in Appendix E. With the exception of samples collected from well MW-9LF, a significant increase in HPC and SD counts is apparent in the post-test samples when compared to the baseline sample results. In fact, an approximately three-order-of-magnitude increase in microbial population counts was

measured in groundwater samples collected from wells MW-9S and MW-9D after sparging air into the subsurface for approximately two weeks. These results indicate that air sparging significantly increased the microbial populations, in particular microbes specific to the degradation of petroleum hydrocarbons including gasoline.

The microbial population counts in the baseline and post-test groundwater samples collected from well MW-9LF were not significant, and essentially no increase in microbial population resulted during the pilot test. Petroleum hydrocarbon concentrations were low in the groundwater samples collected from well MW-9LF. As discussed above, the significant increases observed in DO concentrations and ORP values in groundwater samples collected from well MW-9LF after the pilot test, along with low microbial population counts, indicate that oxygen delivered to well MW-9LF was not consumed by aerobic respiration; therefore, no increase in microbial population counts were observed. In the absence of nutrients (i.e., hydrocarbons) to support a population of hydrocarbon-degrading microbes in well MW-9LF, aerobic respiration did not consume the oxygen supplied by sparging; therefore, the concentration of DO increased and remained elevated.

The results for the post-test sample collected from well MW-7D cannot be compared to baseline HPC and SD counts that were not measured; however, counts are elevated compared to baseline counts in samples collected from wells MW-9S and MW-9D. The results for well MW-7D indicate that the two-week sparge test likely caused a significant (approximately one order of magnitude) increase in microbial populations as far as approximately 30 feet from the sparge wells.

6.7 Soil-Gas Analytical Results

Analytical results for the soil-gas samples collected during and after air sparging was conducted are summarized in Table 3, based on the certified analytical report included in Appendix E. The only compounds detected in soil-gas samples collected either during or after sparging included TPHg and BTEX compounds; TPHd, naphthalene, and MTBE were not detected in any of the soil-gas samples. The soil-gas analytical results indicate that, during air sparging, soil gas containing elevated concentrations of petroleum hydrocarbons and related compounds was generated. Concentrations reduced significantly approximately 24 hours after sparging ceased.

Soil-gas laboratory results were compared both to Environmental Screening Levels (ESLs) for indoor air and soil gas (vapor intrusion concerns) in commercial or industrial land use areas and to worker health and safety permissible exposure limits (PELs; included in Table 3). The TPHg concentrations detected in the soil-gas samples collected from probes SG-3 and SG-4 under sparging conditions exceeded the ESL for TPHg (29,000 micrograms per cubic meter [$\mu g/m^3$]). No other results exceeded the ESLs. It should be noted that the ESLs were developed for vapor intrusion concerns and that they are intended to be used for evaluation of potential indoor-air impacts; however, no offices are present in the immediate vicinity of the sparge area and,

therefore, vapor intrusion to indoor air is not of concern. In addition, these ESLs were developed assuming exposure for 30 years under indoor-air conditions. No shallow soil-gas screening levels exist for evaluating potential outdoor-air impacts; a site-specific human health risk assessment would need to be conducted to evaluate potential risks to workers. Considering worker health and safety (PELs) as defined by the California Occupational Safety and Health Administration (Cal/OSHA), the highest detected TPHg concentration (550,000 $\mu g/m^3$, equivalent to approximately 156 parts per million by volume [ppmv]), was below the PEL for TPHg (300 ppmv). BTEX concentrations detected in soil-gas samples were well below the PELs. The lowest PEL for BTEX compounds is for benzene at 1 ppmv; benzene was detected at a concentration of 21 $\mu g/m^3$, equivalent to approximately 0.007 ppmv.

Based on the analytical results from the soil-gas samples collected, and the site conditions (outdoor air with dispersion of soil gas at ground surface; facility personnel working only rarely and for short periods of time in the vicinity of a potential future air sparge system; existing ambient air quality due to existing asphalt plant operations), and considering the Cal/OSHA PELs, the increased risk to human health from sparging activities is not considered to be significant.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Results of the pilot test indicate that effective delivery of oxygen into groundwater to approximately 45 feet bgs (into the "S", "D," and "LF" groundwater depth intervals) can be achieved using a conventional air sparging approach. Increases in microbial populations, ORP, and DO concentrations observed during the pilot test also indicate that oxygen injection through sparging will increase biodegradation rates in the site source area, thereby reducing the time required to reach water-quality objectives at this Site.

Observed changes in groundwater elevations and chemistry during the pilot test indicate that sparging into the existing set of injection wells (OXY-1D and OXY-1LF) can be effective at delivering oxygen within the significantly large ROI (approximately 35 feet) indicated on Figure 4. Within this area, increases in ORP, DO, microbial populations, and/or the presence of tracer gas provided direct evidence of an influence from the injection into wells OXY-1D/LF. Little added benefit was observed by sparging into the shallowest sparge well (OXY-1S).

Finally, soil-gas data collected during this test indicate that injection of air into wells OXY-1D/LF resulted in increases in the concentrations of petroleum hydrocarbons in soil gas. However, the observed increases were below levels of concern regarding potential human health risks for this Site.

Based on these results, LFR recommends that air sparging be conducted in the source area using existing sparge wells OXY-1D/LF, and that a groundwater monitoring program be developed to monitor the natural attenuation of petroleum hydrocarbons in

groundwater beneath the Site, using the existing groundwater monitoring well network. The proposed remedial alternative essentially would be to enhance the biodegradation of petroleum hydrocarbons in the source area through air sparging, coupled with monitored natural attenuation in the entire plume area. The performance of the air sparge system would be monitored and adjusted as necessary for optimum performance, and the groundwater monitoring program would include sampling for inorganic parameters indicative of petroleum hydrocarbon biodegradation, and for organic parameters to monitor for the attenuation of petroleum hydrocarbons in groundwater beneath the Site. Pending approval of this recommendation from ACEH, LFR will develop a performance and groundwater monitoring program and schedule. The objectives for the sparging and performance monitoring plan will be to:

- Confirm that injection of air into wells OXY-1D/LF is increasing biodegradation rates in the source area, with the ultimate expectation that concentrations of hydrocarbons will decrease in wells clusters MW-7 and MW-9.
- Assess for decreasing trends in petroleum hydrocarbon concentrations downgradient from the source area.
- Confirm that air injection is not resulting in concentrations of hydrocarbons in the vadose zone above levels that are acceptable human health risk levels.

Performance monitoring data will be used to assess whether contingency measures for this proposed system may be warranted. Potential contingency measures for this proposed remedy could include:

- Increasing the concentration of oxygen in the injected air stream through addition of an air filter system (i.e., injecting oxygen-enriched air)
- Increasing the number of injection wells and the resulting sparge area

These potential contingency measures may be triggered in the event that performance monitoring data indicate that the existing sparge configuration is not delivering oxygen at a sufficient rate within the treatment area to achieve reductions in hydrocarbon concentrations beneath the Site in a reasonable time frame. Performance assessment and recommendations regarding this system would be included in routine monitoring reports to be provided to ACEH.

8.0 LIMITATIONS STATEMENT

The opinions and recommendations presented in this report are based upon the scope of services, information obtained through the performance of the services, and the schedule as agreed upon by LFR and the party for whom this report was originally prepared. This report is an instrument of professional service and was prepared in accordance with the generally accepted standards and level of skill and care under similar conditions and circumstances established by the environmental consulting

industry. No representation, warranty, or guarantee, express or implied, is intended or given. To the extent that LFR relied upon any information prepared by other parties not under contract to LFR, LFR makes no representation as to the accuracy or completeness of such information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared for a particular purpose. Only the party for whom this report was originally prepared and/or other specifically named parties have the right to make use of and rely upon this report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk.

Results of any investigations or testing and any findings presented in this report apply solely to conditions existing at the time when LFR's investigative work was performed. It must be recognized that any such investigative or testing activities are inherently limited and do not represent a conclusive or complete characterization. Conditions in other parts of the Site may vary from those at the locations where data were collected. LFR's ability to interpret investigation results is related to the availability of the data and the extent of the investigation activities. As such, 100% confidence in environmental investigation conclusions cannot reasonably be achieved.

LFR, therefore, does not provide any guarantees, certifications, or warranties regarding any conclusions regarding environmental contamination of any such property. Furthermore, nothing contained in this document shall relieve any other party of its responsibility to abide by contract documents and applicable laws, codes, regulations, or standards.

9.0 REFERENCES

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Table 1
Pilot Study Groundwater Sample Matrix
Hanson Aggregates Sunol Facility, Asphalt Plant
7999 Athenour Way, Sunol, California

	Field Parameters		Organic		Inorganic				Microbial			
	Temp, EC, pH, DO, ORP		TPHd, TPHg, BTEX, MTBE		Nitrate/Nitrite, TKN, Orthophosphate, BOD, COD, Fe		Fe+2		HPC		SD (gasoline)	
Well ID	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test
MW-1	X	X	X	X	-	-	-	-	-	-	-	-
MW-7S	X	X	X	X	-	-	-	-	-	-	-	-
MW-7D	X	X	X	X	-	X	-	X	-	X	-	X
MW-8	X	X	X	X	-	-	-	-	-	-	-	-
MW-9S	X	X	X	X	X	X	-	X	X	X	-	X
MW-9D	X	X	X	X	X	X	-	X	X	X	X	X
MW-9LF	X	X	X	X	X	X	-	X	X	X	-	X
OXY-1S	-	X	X	X	-	-	-	-	-	-	-	-
OXY-1D	-	X	X	X	-	-	-	-	-	-	-	-
OXY-1LF	-	X	X	X	-	-	-	-	-	-	-	-

Notes:

Dash indicates not analyzed.
Temp = temperature in degrees Celsius (ºC)
EC = electrical conductivity in micro Siemens per centimeter (µS/cm)
DO = dissolved oxygen in milligrams per liter (mg/l)
ORP = oxidation-reduction potential in millivolts (mV)
TPHd = total petroleum hydrocarbons as diesel by EPA Method 8015
TPHg = total petroleum hydrocarbons as gasoline by EPA Method 8260B
BTEX = benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8260B
MTBE = methyl tertiary-butyl ether by EPA Method 8260B
Nitrate and nitrite by EPA Method 354.1
TKN = total Kjeldahl nitrogen by EPA Method 4500
Orthophosphate by EPA Method 365.3
BOD = biological oxygen demand by EPA Method 5210B
COD = chemical oxygen demand by EPA Method 410.1
Fe = dissolved iron by EPA Method 410.1
Fe+2 = dissolved ferrous iron by EPA Method 410.1
HPC = heterotrophic plate count by EPA Method 9215-A
SG (gasoline) = specific degrader for gasoline count by EPA Method 9215-A

Table 2
Analytical Results, Groundwater Monitoring Well Samples
Hanson Aggregates Sunol Facility, Asphalt Plant
7999 Athenour Way, Sunol, California

Monitoring Well ID		MW-1		MW-7S		MW-7D		MW-8		MW-9S		MW-9D		MW-9LF		OXY-1S		OXY-1D		OXY-1LF		*ESLs*
Date Sampled		1/22/08	2/18/08	1/22/08	2/18/08	1/22/08	2/19/08	1/22/08	2/18/08	1/21/08	2/19/08	1/21/08	2/19/08	1/21/08	2/19/08	1/25/08	2/20/08	1/25/08	2/20/08	1/25/08	2/20/08	
Sparge Test Timing		Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	Baseline	Post-Test	
	Units	**Organic Compounds**																				
TPHd	(µg/l)	**440** [1]	**1,000** [1]	**460** [1]	**1,000** [1]	**2,700** [1]	**13,000**	**530** [1]	**450** [1]	**540** [1]	**9,500** [1]	**4,700** [1]	**15,000**	**100** [1]	**180** [1]	**3,800** [1]	**3,700**	**1,000** [1]	**1,300**	**160** [1]	**110** [1]	*100*
TPHg	(µg/l)	**460** [1]	**2,000** [1]	**68** [1]	**2,800** [1]	**13,000** [1]	**56,000**	<50	<50	<50	**25,000** [1]	**54,000**	**34,000**	**90**	<50	**10,000** [1]	**2,000**	**2,400** [1]	**280**	**60** [1]	<50	*100*
Benzene	(µg/l)	**4.6**	**6.3**	<0.50	**15**	**47**	**140**	<0.50	<0.50	<0.50	**9.8**	**1,000**	**290**	<0.50	<0.50	**73**	**3.3**	**23**	**3.7**	**0.73**	<0.50	*1*
Toluene	(µg/l)	**0.52**	**1.2**	<0.50	**68**	**67**	**520**	<0.50	<0.50	<0.50	**75**	**3,100**	**1,300**	<0.50	<0.50	**44**	**6.4**	**5**	**3.2**	<0.50	<0.50	*40*
Ethylbenzene	(µg/l)	**1.3**	**43**	<0.50	**74**	**760**	**2,500**	<0.50	<0.50	<0.50	**18**	**2,300**	**840**	<0.50	<0.50	**650**	**24**	**92**	**0.52**	**0.65**	<0.50	*30*
m,p-Xylene	(µg/l)	<0.50	**33**	**0.99**	**140**	**740**	**3,100**	<0.50	<0.50	<0.50	**2,100**	**4,300**	**3,200**	**0.92**	<0.50	**160**	**24**	**52**	**5.5**	**0.70**	<0.50	*20*
o-Xylene	(µg/l)	<0.50	**4.2**	<0.50	**12**	**61**	**370**	<0.50	<0.50	<0.50	**1,900**	**950**	**1,000**	<0.50	<0.50	**22**	**17**	**5.6**	**12**	<0.50	<0.50	*20*
MTBE	(µg/l)	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<7.1	<0.50	<0.50	<1.0	<0.50	**0.51**	<0.50	<0.50	<0.50	*5*
	Units	**Inorganic Compounds**																				
Nitrate	(mg/l)	-	-	-	-	-	<0.05	-	-	<0.10	<0.05	<0.10	<0.05	<0.10	<0.05	-	-	-	-	-	-	-
Nitrite	(mg/l)	-	-	-	-	-	<0.05	-	-	<0.10	<0.05	<0.10	<0.05	<0.10	<0.05	-	-	-	-	-	-	-
TKN	(mg/l)	-	-	-	-	-	**1.5**	-	-	<1.0	**2.1**	<1.0	**1.6**	<1.0	<1.0	-	-	-	-	-	-	-
Orthophosphate	(mg/l)	-	-	-	-	-	**0.21** [2]	-	-	**0.65**	**0.30** [2]	**0.66**	**0.48** [2]	**0.35**	**0.16** [2]	-	-	-	-	-	-	-
Total Phosphorous	(mg/l)	-	-	-	-	-	**0.19** [3]	-	-	**-**	**0.44** [3]	**-**	**0.2** [3]	**-**	**0.16** [3]	-	-	-	-	-	-	-
BOD	(mg/l)	-	-	-	-	-	**63**	-	-	<5.0	**32**	**23**	**81**	**13**	<5.0	-	-	-	-	-	-	-
COD	(mg/l)	-	-	-	-	-	**16**	-	-	<10	**20**	56	**100**	<10	**100**	-	-	-	-	-	-	-
Dissolved Iron	(mg/l)	-	-	-	-	-	**0.35**	-	-	**0.13** [4]	**0.1**	**2.5** [4]	<0.100	<0.1 [4]	<0.100	-	-	-	-	-	-	-
Ferrous Iron	(mg/l)	-	-	-	-	-	**12**	-	-	-	**0.51**	-	**30**	-	**1.4**	-	-	-	-	-	-	-
	Units																					
HPC (48 Hours)	(cfu/ml)	-	-	-	-	-	13,400-16,900	-	-	3,100-3,400	1,270,000-1,620,000	100-200*	1,210,000-1,620,000	0-100*	0-100*	-	-	-	-	-	-	-
HPC (96 Hours)	(cfu/ml)	-	-	-	-	-	30,000-37,000	-	-	11,100-12,000	1,460,000-1,840,000	800-900*	1,480,000-1,790,000	1,100-1,600*	0-200*	-	-	-	-	-	-	-
SD (48 Hours)	(cfu/ml)	-	-	-	-	-	17,400-17,600	-	-	-	1,390,000-1,450,000	200-300*	1,520,000-1,600,000	-	0-100*	-	-	-	-	-	-	-
SD (96 Hours)	(cfu/ml)	-	-	-	-	-	50,000-61,000	-	-	-	1,700,000-1,860,000	1,800-2,300*	1,630,000-1,800,000	-	100*	-	-	-	-	-	-	-
Comments		-	-	-	-	-	Mixed consortium	-	-	Mixed consortium	Mixed consortium	(HPC) Little Growth; (SD) Small white colonies	Mixed consortium	Small white colonies	Little to no growth	-	-	-	-	-	-	-
	Units	**Field Parameters and Observations**																				
Temperature	(°C)	14.7	16.7	14.5	14.5	16.3	15.8	14.9	14.8	16.0	14.6	18.1	16.8	15.4	17.3	15.4	16.4	16.3	17.1	13.1	16.4	-
Conductivity	(µS/cm °C)	3,956	3,148	2,168	1,542	2,068	2,035	1,548	1,238	3,825	3,053	3,111	2,664	2,065	1,607	3,540 [5]	3,065	2,380 [5]	2,228	1,750 [5]	1,943	-
pH	(SU)	6.88	6.85	6.68	6.8	6.77	6.91	0.55	6.75	6.76	7.16	6.65	6.98	6.91	7.48	7.16	7.44	7.27	7.33	7.53	7.32	-
Turbidity	(NTU)	5.5	9.1	1.5	13.6	40.7	529	0.9	16	6	21.6	11	1,352	1.8	288	-	72	-	1,343	-	734	-
DO [4]	(mg/l)	0.62	0.54	0.43	0.50	0.44	0.27	0.55	0.38	0.94	0.73	0.86	0.17	0.62	6.44	-	0.12	-	0.64	-	1.11	-
ORP	(mV)	-124.3	-54.0	-122.6	-12.8	-186.7	-125.3	14.9	40.1	-196.2	11.5	-267.2	-102.2	-216.1	375	-	20.5	-	83.4	-	77.4	-
General field observations		none	none	none	none	none	none	none	none	none	none	sheen, some product detected with oil/water interface probe (~0.03 foot)	oily sheen on top of discharge water	none	none	none	none	none	none	none	none	-

Table 2
Analytical Results, Groundwater Monitoring Well Samples
Hanson Aggregates Sunol Facility, Asphalt Plant
7999 Athenour Way, Sunol, California

Notes:
Dash indicates not analyzed, not available, or not applicable
"<" = analyte not detected at or above the noted laboratory reporting limit
ID = identification; monitoring well identification number
µg/l = micrograms per liter; parts per billion (ppb)
mg/l = milligrams per liter; parts per million (ppm)
ºC = degrees Celsius
µS/cm = micro Siemens per centimeter
SU = standard units
NTU = Nephelometric turbidity units
mV = milliVolts
cfu/ml = colony-forming units per milliliter
HPC = heterotrophic plate count
TPHd = total petroleum hydrocarbons as diesel
SD = specific degrader for gasoline count
TPHg = total petroleum hydrocarbons as gasoline
DO = dissolved oxygen
MTBE = methyl tertiary-butyl ether
ORP = oxidation reduction potential
TKN = Total Kjeldahl Nitrogen
BOD = biochemical oxygen demand
COD = chemical oxygen demand
Bold = analyte detected at or above the laboratory reporting limit
[1] Sample exhibits chromatographic pattern that does not resemble standard.
[2] Due to a laboratory error, samples collected on 2/19/08 for orthophosphate were analyzed 7 days out of the EPA-recommended hold time.
[3] Due to a laboratory error, samples collected on 2/19/08 were analyzed for total phosphorous and not for orthophosphate as requested on the chain-of-custody; samples were re-analyzed (see note 2).
[4] DO measurements periodically verified using a Lamotte DO Kit, including for the post-test sample collected from well MF-9LF.
[5] Conductivity values not corrected for temperature.
* Sample did not meet microbial population countable limits based on method specifications.
ESLs = Environmental Screening Levels by San Francisco Bay Regional Water Quality Control Board, November 2007, for Shallow or Deep Soils where Groundwater is a Current or Potential Source of Drinking Water beneath Residential or Industrial/Commercial Land Use Areas.

Table 3
Analytical Results, Soil-Gas Probe Samples
Hanson Aggregates Sunol Facility, Asphalt Plant
7999 Athenour Way, Sunol, California

Soil-Gas Probe ID	SG-3				SG-4				ESLs	PELs	
Date Sampled	2/18/08		2/19/08		2/18/08		2/19/08				
Sparge Test Timing	During Continuous Sparge Test		One Day After Sparging Ceased		During Continuous Sparge Test		One Day After Sparging Ceased				
Sample Volume (ml)	2,015		2,003		2,000		2,003				
	ng	µg/m^3	ng	µg/m^3	ng	µg/m^3	ng	µg/m^3	µg/m^3	ppmv	µg/m^3
TPHd	<1,000	<500	<1,000	<500	<1,000	<500	<1,000	<500	*29,000*	-	-
TPHg	150,000	**74,000**	1,000 J	**500 J**	1,100,000	**550,000**	1,400 J	**700 J**	*29,000*	*300*	*1,060,000*
Benzene	<5.0	<2.5	<5.0	<2.5	41	**21**	<5.0	<2.5	*280*	*1*	*3,200*
Toluene	12	**6**	5.8	**2.9**	130	**65**	69	**34**	*180,000*	*50*	*190,000*
Ethylbenzene	21	**10**	<5.0	<2.5	280	**140**	<5.0	<2.5	*580,000*	*100*	*434,000*
m,p-Xylene	26	**13**	<10	<5.0	10	**5**	<10	<5.0	*58,000*	*100*	*434,000*
o-Xylene	<5.0	<2.5	<5.0	<2.5	21	**11**	<5.0	<2.5	*58,000*	*100*	*434,000*
Napthalene	<5.0	<2.5	<5.0	<2.5	<5.0	<2.5	<5.0	<2.5	*240*	*10*	*52,000*
MTBE	<50	<25	<50	<25	<50	<25	<50	<25	*3,100*	*40*	*144,000*

Notes:

ID = identification; monitoring well identification number

"<" = analyte not detected at or above the noted laboratory reporting limit

ml = milliliters

ng = nanograms

µg/m3 = micrograms per cubic meter

ppmv = parts per million by volume

J = estimated value

TPHg = total petroleum hydrocarbons as gasoline

TPHd = total petroleum hydrocarbons as diesel

MTBE = methyl tertiary-butyl ether

Bold = analyte detected at or above the laboratory reporting limit

Concentrations above the ESLs are shown in boxes.

ESLs = Environmental Screening Levels by San Francisco Bay Regional Water Quality Control Board, November 2007, for Indoor Air and Soil Gas (Vapor Intrusion Concerns) in Commercial/Industrial Land Use Areas.

PELs = Permissable Exposure Limits by the California Occupational Safety and Health Administration (Cal/OSHA), California Code of Regulations Title 8, Section 5155, Airborne Contaminants, Dusts, Fumes, Mists, Vapors and Gases.

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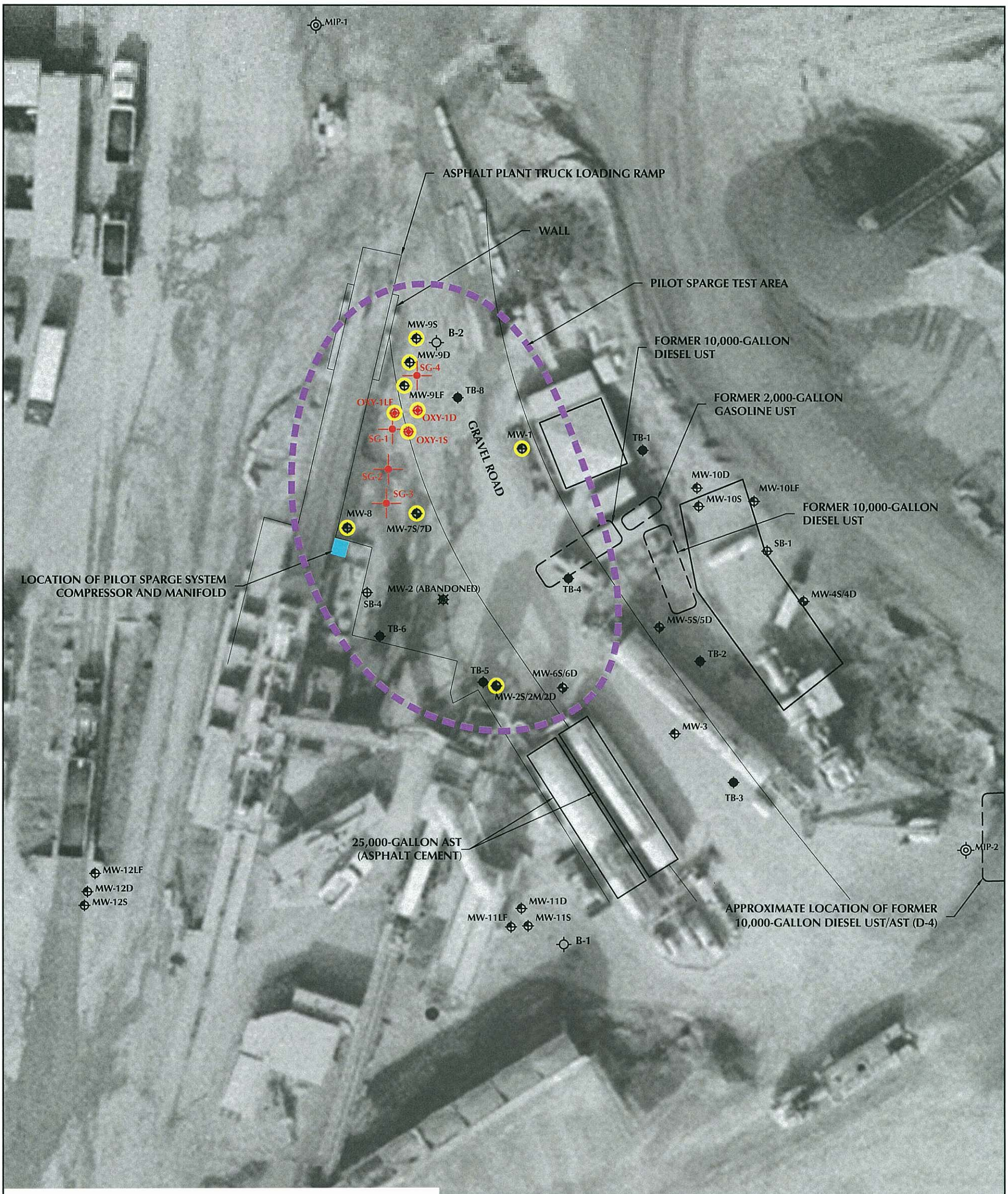
Site Location Map

Hanson Aggregates, 7999 Athenour Way, Sunol, CA

LFR

Figure 1



EXPLANATION:

MW-9S	Groundwater monitoring well by LFR Inc. (single completion; well cluster)
MW-1	Groundwater monitoring well by Tait (single completion)
MW-7S/7D	Existing groundwater monitoring well by Tait (dual nested)
MW-2S/2M/2D	Existing groundwater monitoring well by Tait (triple nested)
MW-2	Abandoned groundwater monitoring well
TB-6	Grab groundwater sample location
SB-4	Temporary soil boring location
B-2	Sonic boring / grab groundwater
MIP-3	MIP boring / grab groundwater
OXY-1S	Pilot test air injection well (approximate location)
SG-1	Soil gas monitoring probe (approximate location)
MW-9S	Wells monitored during pilot test

AST = Aboveground storage tank
UST = Underground storage tank
MIP = Membrane Interface Probe

Pilot Sparge Test Area

Air Sparge Pilot Test Area

Hanson Aggregates, Sunol, California

LFR

Figure 2

I:\Design\001\09480\06\000\dwg\Air Sparge Pilot Test Area.dwg Mar 24,2008-2:46pm

EXPLANATION:

MW-9S	Groundwater monitoring well by LFR Inc. (single completion; well cluster)
MW-1	Groundwater monitoring well by Tait (single completion)
MW-7S/7D	Existing groundwater monitoring well by Tait (dual nested)
MW-2S/SM/2D	Existing groundwater monitoring well by Tait (triple nested)
MW-2	Abandoned groundwater monitoring well
TB-6	Grab groundwater sample location
SB-4	Temporary soil boring location
B-2	Sonic boring / grab groundwater
MIP-3	MIP boring / grab groundwater
OXY-1S	Pilot test air injection well (approximate location)
SG-1	Soil gas monitoring probe (approximate location)
MW-1	Well monitored during pilot test

N

0 15 FEET

APPROXIMATE SCALE

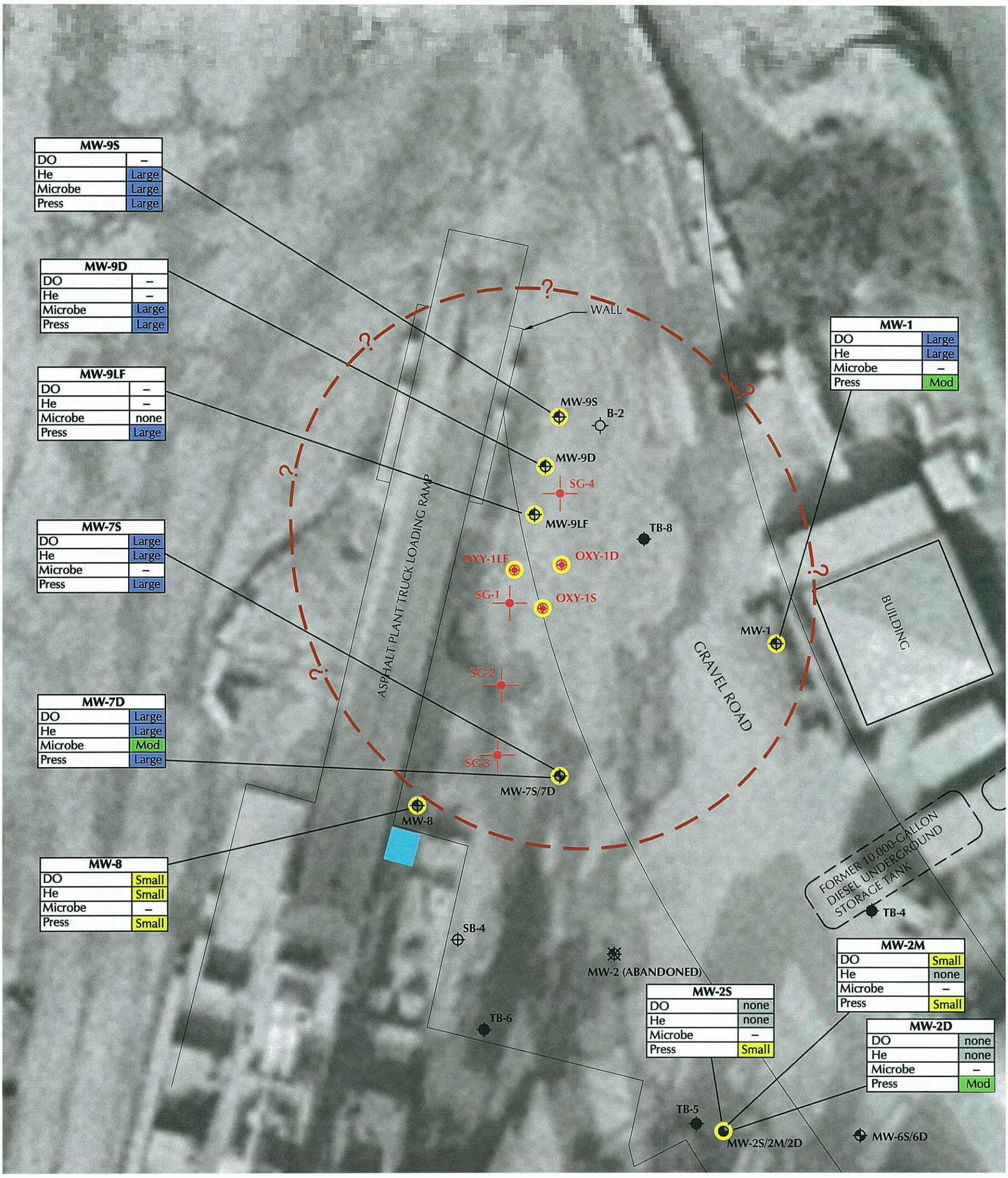
Pilot Sparge Test Wells and Sample Point Locations

Hanson Aggregates, Sunol, California

LFR

Figure 3

I:\Design\001\09480\06\000\dwg\Radius of Influence Indicators.dwg Mar 24,2008-2:47pm



EXPLANATION:

- MW-9S — Groundwater monitoring well by LFR Inc. (single completion; well cluster)
- MW-1 — Groundwater monitoring well by Tait (single completion)
- MW-7S/7D — Existing groundwater monitoring well by Tait (dual nested)
- MW-2S/SM/2D — Existing groundwater monitoring well by Tait (triple nested)
- MW-2 — Abandoned groundwater monitoring well
- TB-6 — Grab groundwater sample location
- SB-4 — Temporary soil boring location
- B-2 — Sonic boring / grab groundwater
- MIP-3 — MIP boring / grab groundwater
- OXY-1S — Pilot test air injection well (approximate location)
- SG-1 — Soil gas monitoring probe (approximate location)
- MW-1 — Well monitored during pilot test
- Radius of Estimated Influence

KEY TO OBSERVATIONS MADE DURING PILOT TEST

DO = Dissolved oxygen increase
He = Helium response in well during tracer tests
Microbe = Microbial population increase after pilot test
Press = Pressure response in well

Large = Significant change observed
Mod = Moderate change observed
Small = Slight change observed
none = no change observed
– = not monitored

N

0 15 FEET
APPROXIMATE SCALE

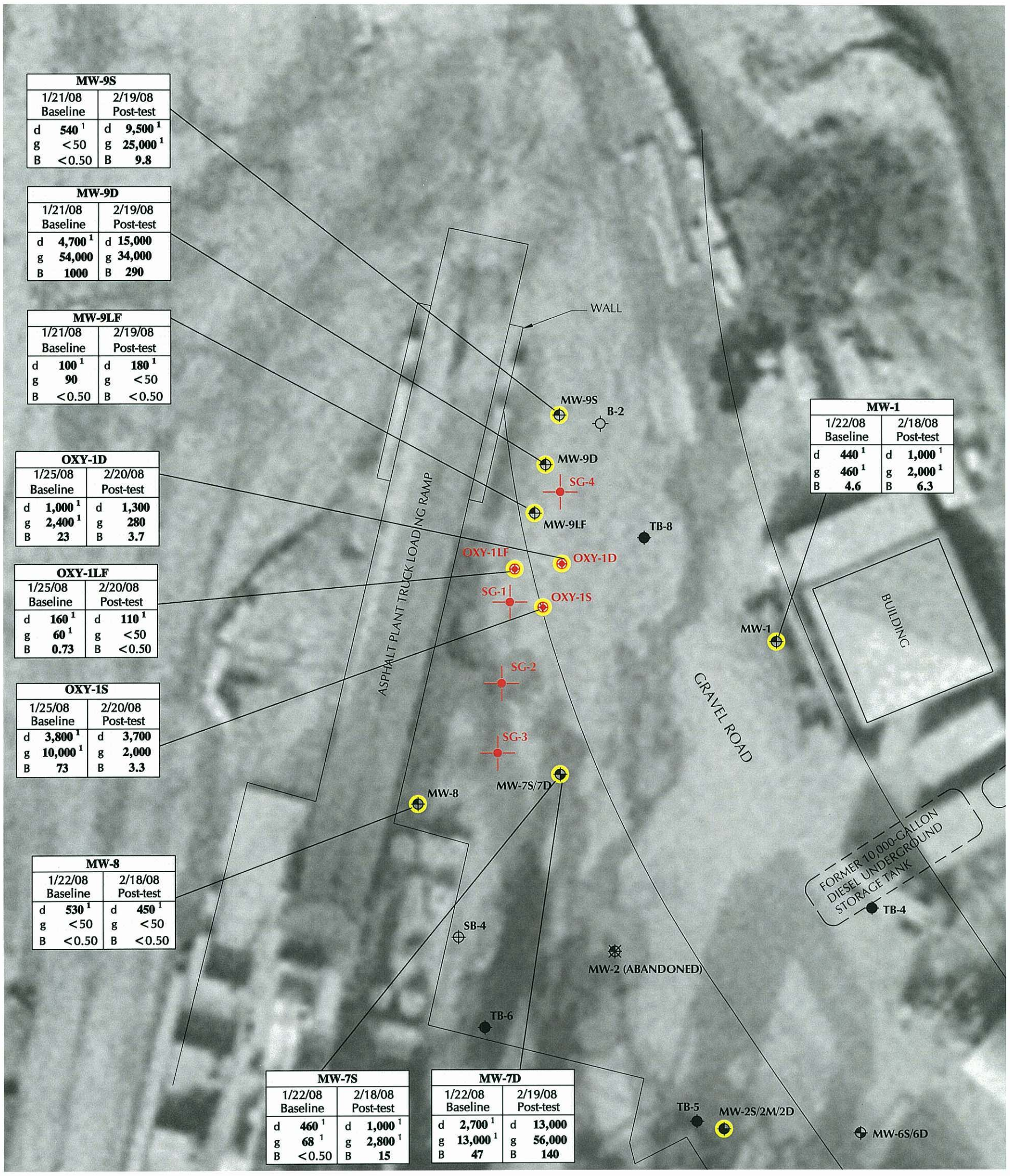
Radius of Influence Indicators

Hanson Aggregates, Sunol, California

LFR

Figure 4

I:\Design\001\09480\06\000\dwg\Radius of Influence Indicators.dwg Mar 24,2008-2:41pm



EXPLANATION:

- MW-9S — Groundwater monitoring well by LFR Inc. (single completion; well cluster)
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- MW-2S/SM/2D — Existing groundwater monitoring well by Tait (triple nested)
- MW-2 — Abandoned groundwater monitoring well
- TB-6 — Grab groundwater sample location
- SB-4 — Temporary soil boring location
- B-2 — Sonic boring / grab groundwater
- OXY-1D — Pilot test air injection well
- SG-1 — Soil gas monitoring probe
- MW-1 — Well monitored during pilot test

[1] Sample exhibits chromatographic pattern which does not resemble standard

- d — Total petroleum hydrocarbons as diesel
- g — Total petroleum hydrocarbons as gasoline
- B — Benzene

MW-1	
1/22/08 Baseline	2/18/08 Post-test
d 440 [1]	d 1,000 [1]
g 460 [1]	g 2,000 [1]
B 4.6	B 6.3

MW-1 — Sample identification; 1/22/08 Baseline — Date sampled; d 440 [1], g 460 [1], B 4.6 — Concentration in micrograms per liter (µg/L); B — Constituent

N

0 15 FEET
APPROXIMATE SCALE

Air Sparge Pilot Test
Groundwater Analytical Results
Petroleum Hydrocarbons

Hanson Aggregates, Sunol, California

LFR

Figure 5

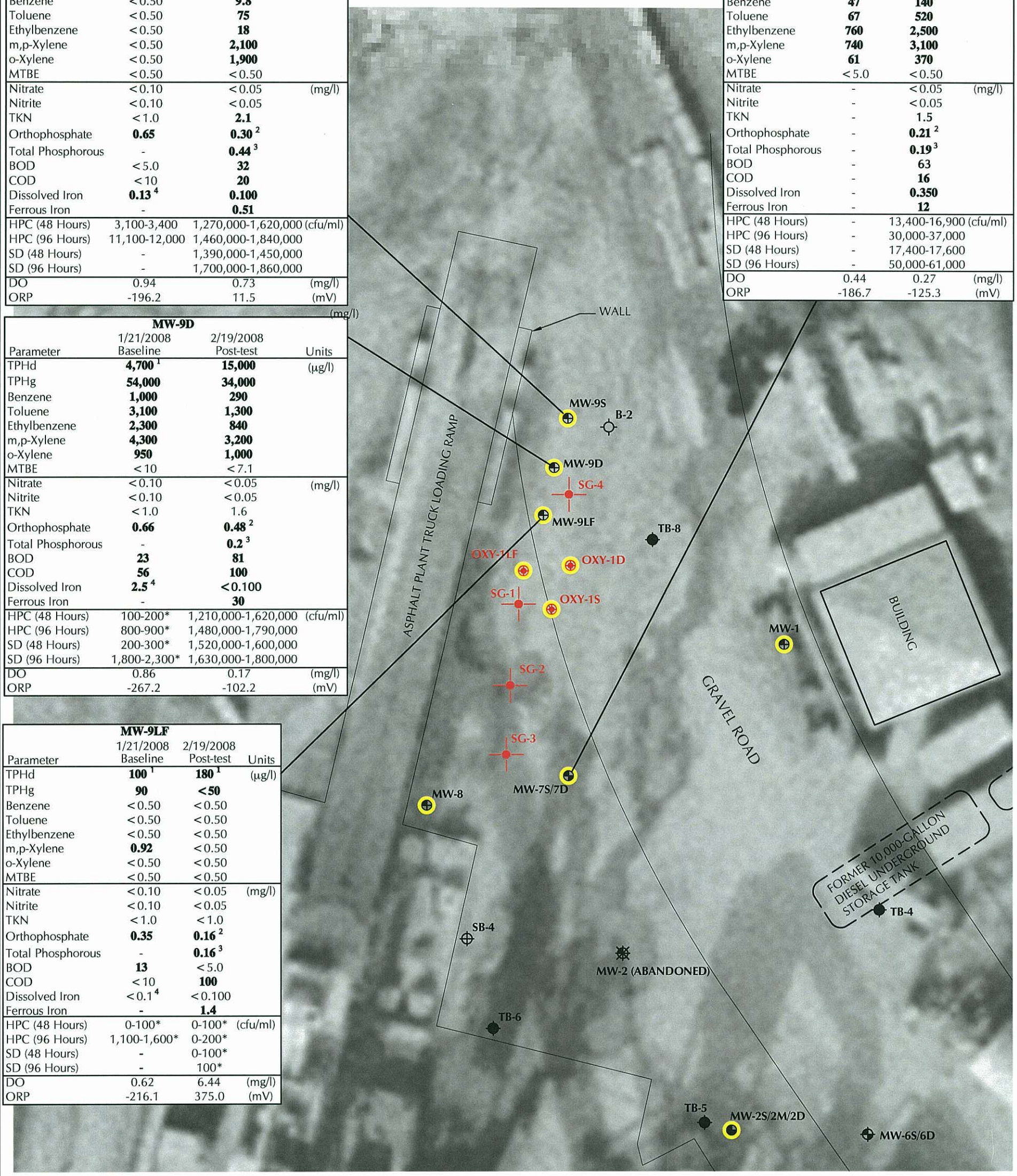
I:\Design\001\09480\06\000\dwg\GW Data PRE and POST ASPT Feb 2008.dwg Mar 17,2008-4:25pm

MW-9S			
Parameter	1/21/2008 Baseline	2/19/2008 Post-test	Units
TPHd	**540** [1]	**9,500** [1]	(µg/l)
TPHg	< 50	**25,000** [1]	
Benzene	< 0.50	**9.8**	
Toluene	< 0.50	**75**	
Ethylbenzene	< 0.50	**18**	
m,p-Xylene	< 0.50	**2,100**	
o-Xylene	< 0.50	**1,900**	
MTBE	< 0.50	< 0.50	
Nitrate	< 0.10	< 0.05	(mg/l)
Nitrite	< 0.10	< 0.05	
TKN	< 1.0	**2.1**	
Orthophosphate	**0.65**	**0.30** [2]	
Total Phosphorous	-	**0.44** [3]	
BOD	< 5.0	**32**	
COD	< 10	**20**	
Dissolved Iron	**0.13** [4]	**0.100**	
Ferrous Iron	-	**0.51**	
HPC (48 Hours)	3,100-3,400	1,270,000-1,620,000	(cfu/ml)
HPC (96 Hours)	11,100-12,000	1,460,000-1,840,000	
SD (48 Hours)	-	1,390,000-1,450,000	
SD (96 Hours)	-	1,700,000-1,860,000	
DO	0.94	0.73	(mg/l)
ORP	-196.2	11.5	(mV)

MW-9D			
Parameter	1/21/2008 Baseline	2/19/2008 Post-test	Units
TPHd	**4,700** [1]	**15,000**	(µg/l)
TPHg	**54,000**	**34,000**	
Benzene	**1,000**	**290**	
Toluene	**3,100**	**1,300**	
Ethylbenzene	**2,300**	**840**	
m,p-Xylene	**4,300**	**3,200**	
o-Xylene	**950**	**1,000**	
MTBE	< 10	< 7.1	
Nitrate	< 0.10	< 0.05	(mg/l)
Nitrite	< 0.10	< 0.05	
TKN	< 1.0	1.6	
Orthophosphate	**0.66**	**0.48** [2]	
Total Phosphorous	-	**0.2** [3]	
BOD	**23**	**81**	
COD	**56**	**100**	
Dissolved Iron	**2.5** [4]	**< 0.100**	
Ferrous Iron	-	**30**	
HPC (48 Hours)	100-200*	1,210,000-1,620,000	(cfu/ml)
HPC (96 Hours)	800-900*	1,480,000-1,790,000	
SD (48 Hours)	200-300*	1,520,000-1,600,000	
SD (96 Hours)	1,800-2,300*	1,630,000-1,800,000	
DO	0.86	0.17	(mg/l)
ORP	-267.2	-102.2	(mV)

MW-9LF			
Parameter	1/21/2008 Baseline	2/19/2008 Post-test	Units
TPHd	**100** [1]	**180** [1]	(µg/l)
TPHg	**90**	**< 50**	
Benzene	< 0.50	< 0.50	
Toluene	< 0.50	< 0.50	
Ethylbenzene	< 0.50	< 0.50	
m,p-Xylene	**0.92**	< 0.50	
o-Xylene	< 0.50	< 0.50	
MTBE	< 0.50	< 0.50	
Nitrate	< 0.10	< 0.05	(mg/l)
Nitrite	< 0.10	< 0.05	
TKN	< 1.0	< 1.0	
Orthophosphate	**0.35**	**0.16** [2]	
Total Phosphorous	-	**0.16** [3]	
BOD	**13**	< 5.0	
COD	< 10	**100**	
Dissolved Iron	< 0.1 [4]	< 0.100	
Ferrous Iron	-	**1.4**	
HPC (48 Hours)	0-100*	0-100*	(cfu/ml)
HPC (96 Hours)	1,100-1,600*	0-200*	
SD (48 Hours)	-	0-100*	
SD (96 Hours)	-	100*	
DO	0.62	6.44	(mg/l)
ORP	-216.1	375.0	(mV)

MW-7D			
Parameter	1/21/2008 Baseline	2/19/2008 Post-test	Units
TPHd	**2,700** [1]	**13,000**	(µg/l)
TPHg	**13,000** [1]	**56,000**	
Benzene	**47**	**140**	
Toluene	**67**	**520**	
Ethylbenzene	**760**	**2,500**	
m,p-Xylene	**740**	**3,100**	
o-Xylene	**61**	**370**	
MTBE	< 5.0	< 0.50	
Nitrate	-	< 0.05	(mg/l)
Nitrite	-	< 0.05	
TKN	-	1.5	
Orthophosphate	-	**0.21** [2]	
Total Phosphorous	-	**0.19** [3]	
BOD	-	**63**	
COD	-	**16**	
Dissolved Iron	-	**0.350**	
Ferrous Iron	-	**12**	
HPC (48 Hours)	-	13,400-16,900	(cfu/ml)
HPC (96 Hours)	-	30,000-37,000	
SD (48 Hours)	-	17,400-17,600	
SD (96 Hours)	-	50,000-61,000	
DO	0.44	0.27	(mg/l)
ORP	-186.7	-125.3	(mV)



EXPLANATION:

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- MW-1 — Groundwater monitoring well by Tait (single completion)
- MW-7S/7D — Existing groundwater monitoring well by Tait (dual nested)
- MW-2S/SM/2D — Existing groundwater monitoring well by Tait (triple nested)
- MW-2 — Abandoned groundwater monitoring well
- TB-6 — Grab groundwater sample location
- SB-4 — Temporary soil boring location
- B-2 — Sonic boring / grab groundwater
- OXY-1D — Pilot test air injection well
- SG-1 — Soil gas monitoring probe
- MW-1 — Well monitored during pilot test

TPH-d	Total Petroleum Hydrocarbons as Diesel
TPH-g	Total Petroleum Hydrocarbons as Gas
TKN	Total Kjeldahl Nitrogen
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
HPC	Heterotrophic Plate Count
SD	Specific Degrader for Gasoline Count
DO	Dissolved Oxygen
ORP	Oxidation Reduction Potential

See Table 2 for additional notes.

N

0 15 FEET

APPROXIMATE SCALE

Air Sparge Pilot Test
Groundwater Analytical Results
Indicator Parameters

Hanson Aggregates, Sunol, California

LFR

Figure 6

I:\Design\001\09480\06\000\dwg\GW Analytical Data Feb 2008.dwg Mar 24,2008-3:04pm

APPENDIX A

Field Boring Logs and Drilling Permit

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL OXY-1S

PAGE 1 OF 1

PROJECT LOCATION Sunol, CA
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION HOLE DIAMETER 8"
TOP OF CASING ELEVATION HOLE DEPTH 17'
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY DNR DATE 1/23/08

DRILLING CONTRACTOR Cascade
DRILLING METHOD Hollow Stem Auger
STAMP (IF APPLICABLE) AND/OR NOTES
using 5' core barrel to sample

2" PVC

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel fill			
				CL			lean clay [CL], very dark brown, damp, firm, 70% fines, 10% fine sand, mod to high plasticity		PVC Riser	
5							[Hand Augered first 5']	0.0	Neat cement grout	5
				ML			Sandy silt [ML], orangish brown, damp, firm, 80% fines, 20% fine to med sand, low to moderate plasticity	0.0		
10									coated bentonite pellets	10
				GM			Silty Gravel w/ sand [GM], greyish brown, damp, fine to coarse gravel 70%, fine to med sand 5%, coarse sand 10%, 15% fines, poorly graded	0.0		
15									#2/12 monterey sand; .020 slot screen	15
				GM			silty gravel, [GM], greyish grey, moist, fine to coarse gravel 75%, coarse sand 5%, fines 20%, poorly graded, petroleum odor	28.5	Bottom of casing 17'	
20									Bottom of boring 17'	20

(Continued Next Page)

APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL OXY-1D

PROJECT LOCATION Sunol, Ca
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION
HOLE DIAMETER 8"
TOP OF CASING ELEVATION
HOLE DEPTH 32'
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY DCK
DATE 1/22/08

DRILLING CONTRACTOR Cascade
DRILLING METHOD Hollow Stem Auger
STAMP (IF APPLICABLE) AND/OR NOTES
sampled w/ 5' core barrel

2" PVC

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel fill			
				CL			lean clay [CL] very dark brown, damp, firm, 90% fines, 10% fine sand, mod plasticity	0.0		
5							[Hand Augered first 5']	0.0	neat cement grout	5
				ML			sandy silt, [ML] orangish brown, damp, firm, 20% fine sand, 80% fines, mod plasticity	0.0		
10								0.0		10
							silty gravel, GM, greyish brown, damp fine to course gravel, sub angular 70%, course sand 5%, med to fine sand 5%, fines 20%, moderately graded, light petroleum odor	0.5	Bentonite chips	
15				GM			silty gravel, GM, greenish grey, moist, fine to course gravel, subangular 75%, course sand 5%, fines 20%, moderately graded, petroleum odor	96.1 6.7		15
20										20

(Continued Next Page)

APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

PROJECT NAME Hanson Sunol

CLIENT Hanson

LOG OF BORING / WELL OXY-1D

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM 2" PVC	DEPTH (feet)
							no course gravels, wet	26.1	Bentonite chips	
							cont. petroleum odor	19.5	PVC Riser	
25				GM			increasing sand content, decreasing silt	16.5	Coated Bentonite Pellets	25
							"abt" petroleum odor	9.1	#2/16 Monterey Sand	
30									.020 PVC screen	30
35										35
40										40

(Continued Next Page)

MATERIALS USED

APPROVED BY: _____ DATE: _____

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

1D

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL OX4-1LF

PROJECT LOCATION Sunol, Ca
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION
HOLE DIAMETER 8"
TOP OF CASING ELEVATION
HOLE DEPTH 45'
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY DCR
DATE 1/22/08

DRILLING CONTRACTOR Cascade
DRILLING METHOD HSA
STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel fill			
				CL			lean clay [CL], very dark brown, damp, firm, 90% fines, 10% fine sand, med plasticity	0.0		
5							[Hand Augered first 5']		neat cement grout	5
				ML			Sandy silt [ML], greyish orange, damp, soft to firm, 20% med to fine sand, 80% fines, low to mod plasticity (5% coarse sand)	0.0		
10				ML			sandy silt with gravel [ML], orange brown, damp soft, 20% fine gravel, 30% med sand, 50% silt (fines), low plasticity,	0.0	Bentonite hole plug	10
15	wet			GM			silty gravel [GM] greyish brown, moist, fine to coarse gravel, subangular 75%, Bounce sand 5%, fines 20%, moderately graded - wet, light petroleum odor, some greenish grey staining	0.6		15
20										20

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APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

PROJECT NAME Hanson Sunol

CLIENT Hanson

LOG OF BORING / WELL 6xy-1 LF

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel w/ sand [GM], greenish grey, wet, fine to coarse, subangular, gravel 65%, coarse sand 15%, fines 20%, well graded, light petroleum odor	0.2		
25				SM			silty sand, [SM] greenish grey, wet, coarse sand, subangular 70%, fine to coarse gravel, subangular (5%), 25% fines, moderately graded	0.0		25
30				GM			silty gravel [GM], greenish grey, moist, fine to coarse subangular gravel 70%, coarse sand 10%, fines 20%, well graded - lens of coarse sand ~4" thick	0.0	PVC riser Bentonite chips Neat cement grout	30
35							decrease in amount of fines	0.0	coated pellet bentonite hole plug	35
40								0.0	#2/16 Monterey sand 0.01 slot PVC screen	40

(Continued Next Page)

MATERIALS USED

APPROVED BY: _____ DATE: _____

LFR

PROJECT NAME Hanson Sunol

CLIENT Hanson

LOG OF BORING / WELL OXY-1 LF

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM		DEPTH (feet)
45				GM			Bottom of Boring - 45' bgs			bottom of casing 44.5	45
50											50
55											55
60											60
65											65

(Continued Next Page)

MATERIALS USED

APPROVED BY: _____ DATE: _____

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

1 LF

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL SG-1

PAGE 1 OF 1

PROJECT LOCATION Sunol, Ca
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION
TOP OF CASING ELEVATION
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY DCR

DRILLING CONTRACTOR Cascade
DRILLING METHOD Hand Auger
STAMP (IF APPLICABLE) AND/OR NOTES

HOLE DIAMETER 2"
HOLE DEPTH 3.25'

DATE 1/23/07

0.75" PVC

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							Silty gravel fill		Bentonite chips over riser	
				CL			lean clay [CL], very dark brown, damp, firm, 90% fines, 10% fine sand, mod plasticity		sand	
									screen PVC	
5										5
10										10
15										15
20										20

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APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL SG-2

PAGE 1 OF 1

PROJECT LOCATION Sunol, Ca
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION
TOP OF CASING ELEVATION
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY
DATE

DRILLING CONTRACTOR Cascade
DRILLING METHOD Hand Auger
STAMP (IF APPLICABLE) AND/OR NOTES

HOLE DIAMETER 2"
HOLE DEPTH 3.25'

0.75" PVC

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel fill		Bentonite chips	
				CL			lean clay, [CL], very dark brown, damp, firm, 90% fines, 10% fine sand, mod plasticity		PVC riser Sand PVC screen	
5										5
10										10
15										15
20										20

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APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL SG-3

PROJECT LOCATION Sunol, Ca
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION
TOP OF CASING ELEVATION
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY DLR
DRILLING CONTRACTOR Cascade
DRILLING METHOD Hand Auger
STAMP (IF APPLICABLE) AND/OR NOTES
HOLE DIAMETER 2"
HOLE DEPTH 3.25'
DATE 1/23/07
0.75" PVC

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel fill		Bentonite chips; PVC Riser	
				CL			lean clay [CL] very dark brown, clump, firm, 90% fines, 10% fine sand, med plasticity		sand; PVC screen	
5										5
10										10
15										15
20										20

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APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PROJ AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

PROJECT NAME Hanson Sunol
CLIENT Hanson

LOG OF BORING / WELL SG-4

PAGE 1 OF 1

PROJECT LOCATION Sunol, Ca
PROJECT NUMBER 001-09480-06
LOCATION
OVA EQUIPMENT
GROUND ELEVATION
HOLE DIAMETER 2"
TOP OF CASING ELEVATION
HOLE DEPTH 3.25'
FIRST ENCOUNTERED WATER
STABILIZED WATER
LOGGED BY
DATE

DRILLING CONTRACTOR Cascade
DRILLING METHOD Hand Auger
STAMP (IF APPLICABLE) AND/OR NOTES

0.75" PVC

DEPTH (feet)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY	BLOW COUNTS (per 6 inches)	U.S.C.S.	GRAPHIC LOG	DEPTHS	LITHOLOGIC DESCRIPTION	PID or OVA (ppm)	WELL DIAGRAM	DEPTH (feet)
							silty gravel fill		Bentonite chips	
				CL			lean clay [CL] very dark brown, damp, firm, 90% fines, 10% fine sand, med plasticity		PVC Riser	
									Sand	
									PVC screen	
5										5
10										10
15										15
20										20

(Continued Next Page)

APPROVED BY: DATE:

LFR

BORING+WELL 2006 FIELD BLANK LFR TEST PRO.U AUG2006.GPJ LFR SEPT 2006.GDT 8/29/06

ZONE 7 WATER AGENCY

100 NORTH CANYONS PARKWAY, LIVERMORE, CALIFORNIA 94551 VOICE (925) 454-5000 FAX (925) 245-9306
E-MAIL whong@zone7water.com

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Hanson Aggregates
7999 Athenour Way, Sunol CA

California Coordinates Source____ ft. Accuracy** ____ ft.
CCN ____ ft. CCE____ ft.
APN ____

CLIENT
Name Lee Cover (Env. Manager)
Address 3000 Busch Road Phone 925-406-4170
City Pleasanton, CA Zip 94566

APPLICANT
Name LFR, Inc. Katrin Schliewen
Email ____ Fax ____
Address 1900 Powell St. 12th Floor Phone (510) 652-4500
City Emeryville, CA Zip 94608

TYPE OF PROJECT:
Well Construction ** Geotechnical Investigation **
Well Destruction ** Contamination Investigation **
Cathodic Protection ** Other ____ **

PROPOSED WELL USE:
Domestic ** Irrigation **
Municipal ** Remediation **
Industrial ** Groundwater Monitoring **
Dewatering ** Other ____ **

DRILLING METHOD:
Mud Rotary ** Air Rotary ** (Hollow Stem Auger) **
Cable Tool ** Direct Push ** Other ____ **

DRILLING COMPANY Cascade Drilling Inc.
DRILLER'S LICENSE NO. 717510

WELL SPECIFICATIONS:
Drill Hole Diameter 8.25 in. Maximum
Casing Diameter 2.0 in. Depth 45.0 ft.
Surface Seal Depth 2.0 ft. Number 3
(*) Fine soil gas points to be determined

SOIL BORINGS:
Number of Borings ____ Maximum
Hole Diameter ____ in. Depth ____ ft.

ESTIMATED STARTING DATE 1/22/08
ESTIMATED COMPLETION DATE 1/25/08

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date 1-14-07
Katrin Schliewen
ATTACH SITE PLAN OR SKETCH

FOR OFFICE USE

PERMIT NUMBER 28008
WELL NUMBER 4S/1E-20H3 to 20H5 (OXY-1 to OXY-3)
APN 096-0080-001-07

PERMIT CONDITIONS
(Circled Permit Requirements Apply)

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal diameter is four inches greater than the well casing diameter.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
3. Grout placed by tremie.
4. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
5. A sample port is required on the discharge pipe near the wellhead.

(C.) GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal diameter is four inches greater than the well or piezometer casing diameter.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
3. Grout placed by tremie.

D. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION. See attached.

(G.) SPECIAL CONDITIONS. Submit to Zone 7 within 60 days after completion of permitted work the well installation report including all soil and water laboratory analysis results.

Approved [signature] Wyman Hong Date 1/15/08

APPENDIX B

Field Photographs

Photograph 1: Air Sparge Pilot Test Compressor.

Photograph 2: Air Sparge Pilot Test System Pressure Regulator and Distribution Manifold.

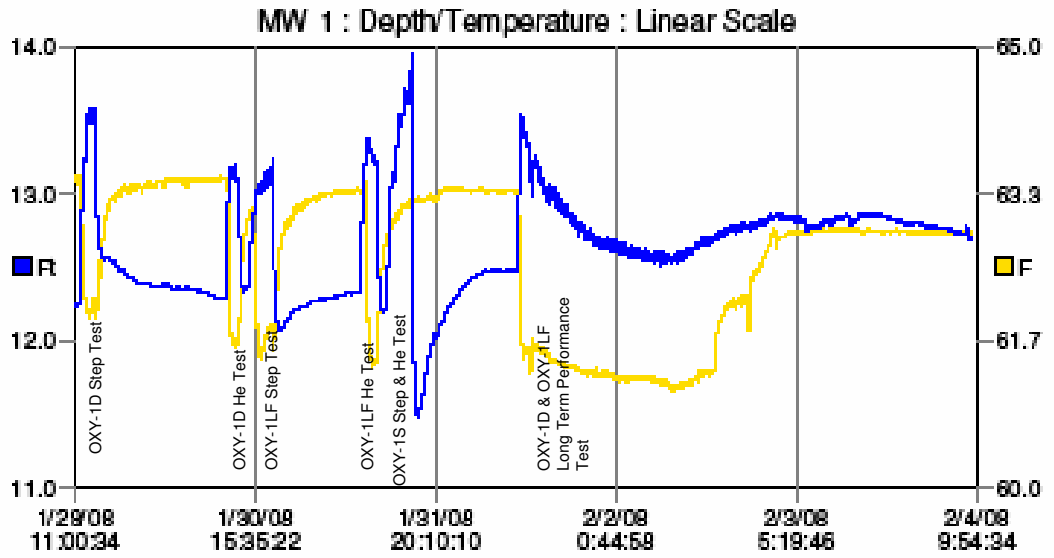
Photograph 3: Uploading Data from an In-Situ® 9500 TROLL to a Laptop Computer.

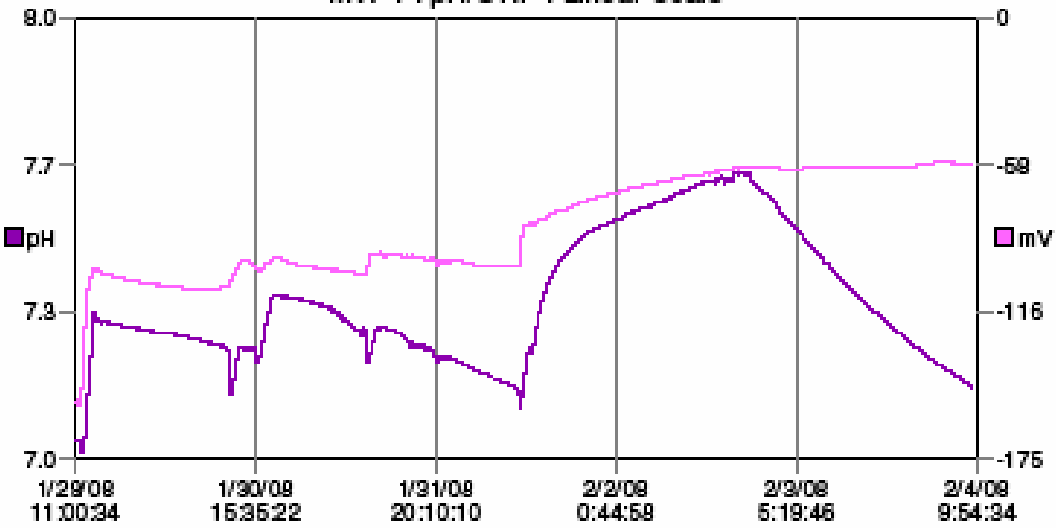
Photograph 4: Soil-Gas Sampling Points and Air Sparging Wellheads Surrounded by Puddles.

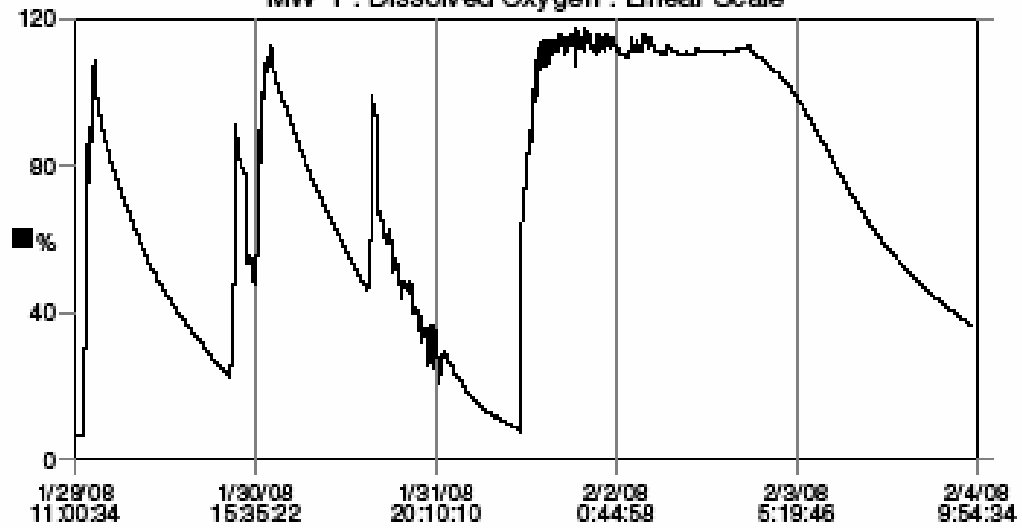
Photograph 5: Silt-Laden Water Bubbling Over From Monitoring Well MW-7D During Sparging of OXY-1D and OXY-1LF Simultaneously. Blue Cables are Attached to Down-Hole In-Situ® 9500 TROLLs.

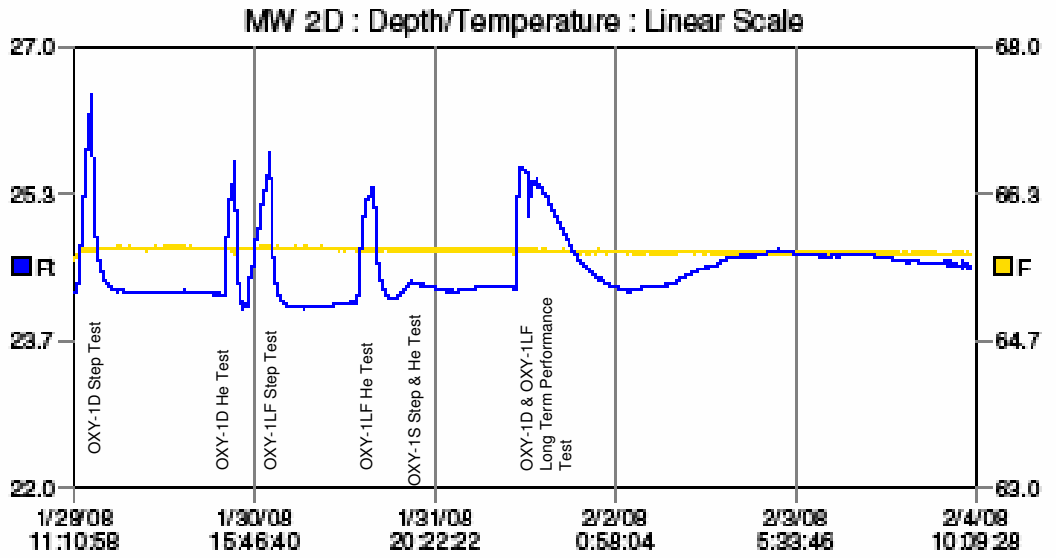
APPENDIX C

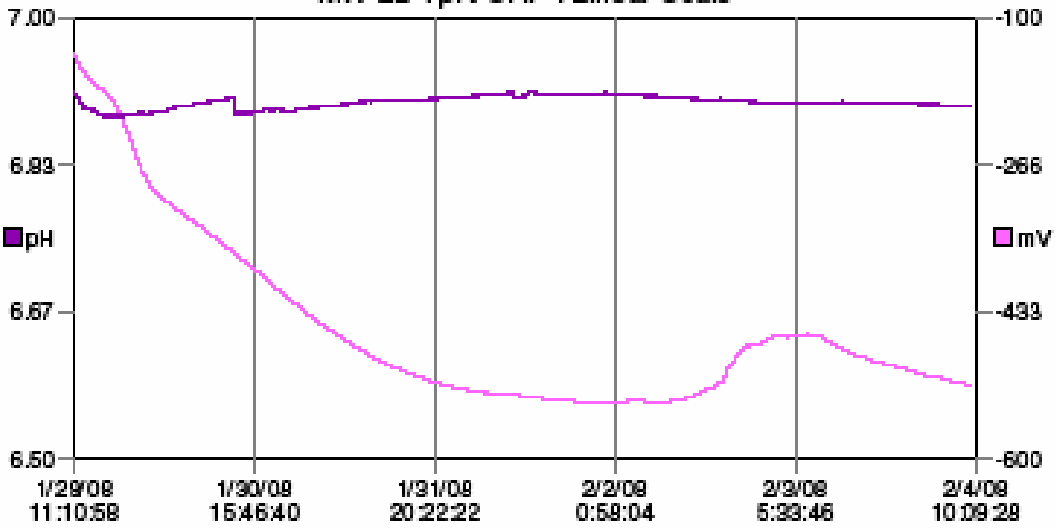
Transducer Data Graphs

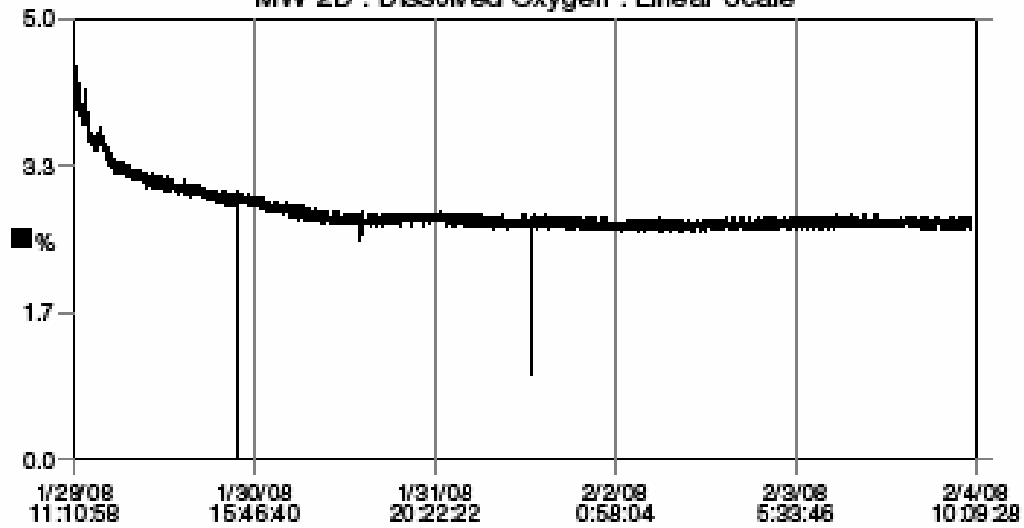

MW 1 : Depth/Temperature : Linear Scale
14.0
13.0
12.0
11.0
ft
65.0
63.3
61.7
60.0
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
OXY-1S Step & He Test
OXY-1D & OXY-1LF Long Term Performance Test
1/29/08 11:00:34
1/30/08 15:35:22
1/31/08 20:10:10
2/2/08 0:44:58
2/3/08 5:19:46
2/4/08 9:54:34

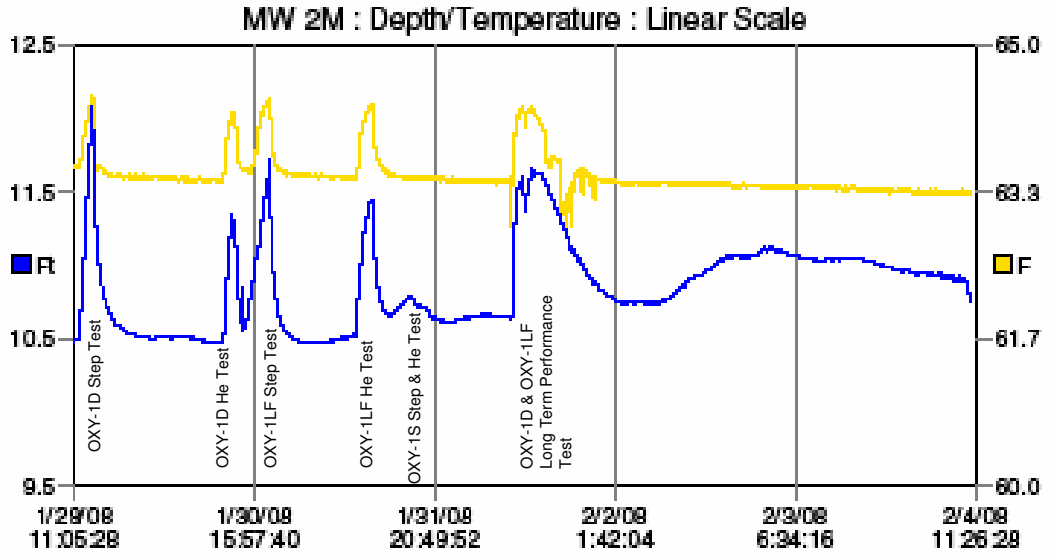

MW 1 : pH/ORP : Linear Scale
8.0
7.7
7.3
7.0
pH
0
-59
-116
-175
mV
1/29/08 11:00:34
1/30/08 15:35:22
1/31/08 20:10:10
2/2/08 0:44:58
2/3/08 5:19:46
2/4/08 9:54:34

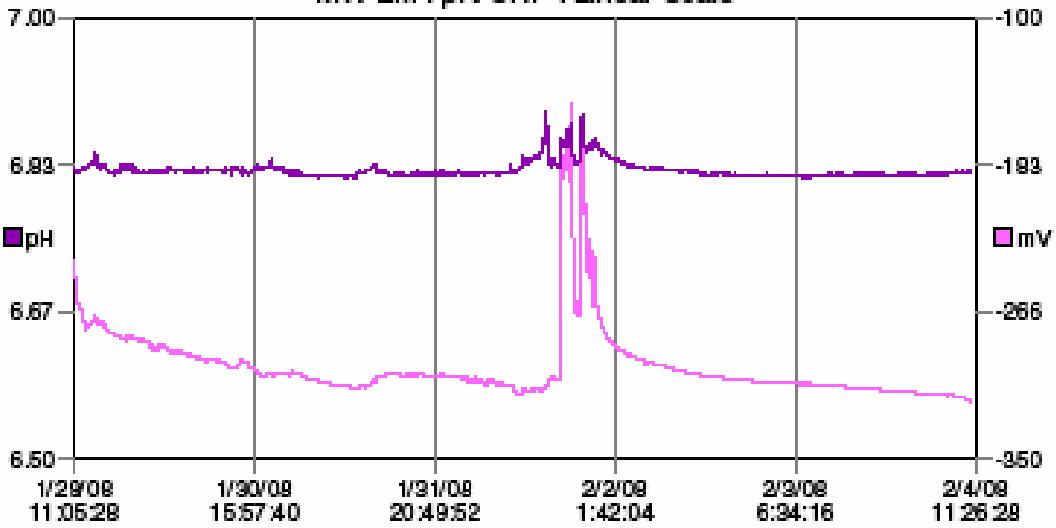

MW 1 : Dissolved Oxygen : Linear Scale
120
80
40
0
%
1/29/08 11:00:34
1/30/08 15:35:22
1/31/08 20:10:10
2/2/08 0:44:58
2/3/08 5:19:46
2/4/08 9:54:34

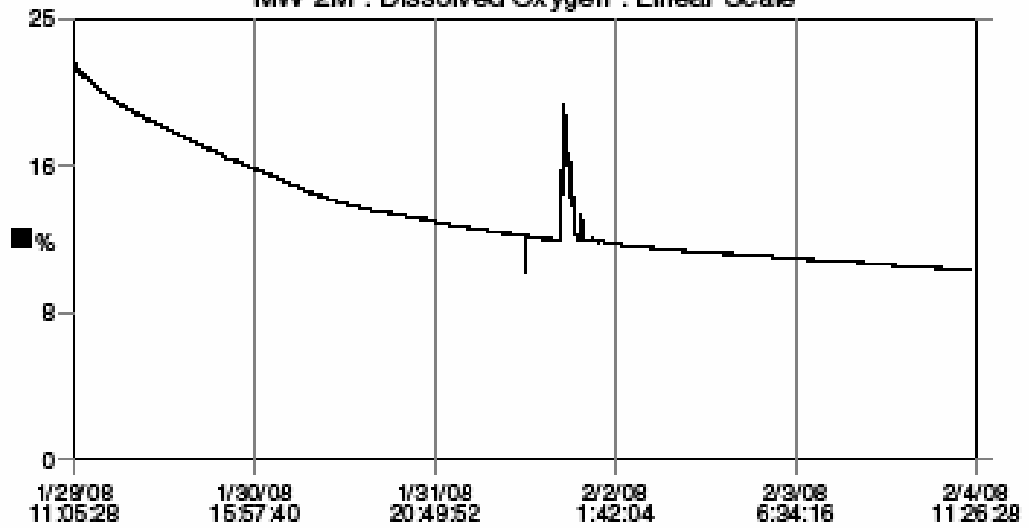

MW 2D : Depth/Temperature : Linear Scale
27.0
25.3
23.7
22.0
68.0
66.3
64.7
63.0
R
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
OXY-1S Step & He Test
OXY-1D & OXY-1LF Long Term Performance Test
1/29/08 11:10:58
1/30/08 15:46:40
1/31/08 20:22:22
2/2/08 0:58:04
2/3/08 5:33:46
2/4/08 10:09:28

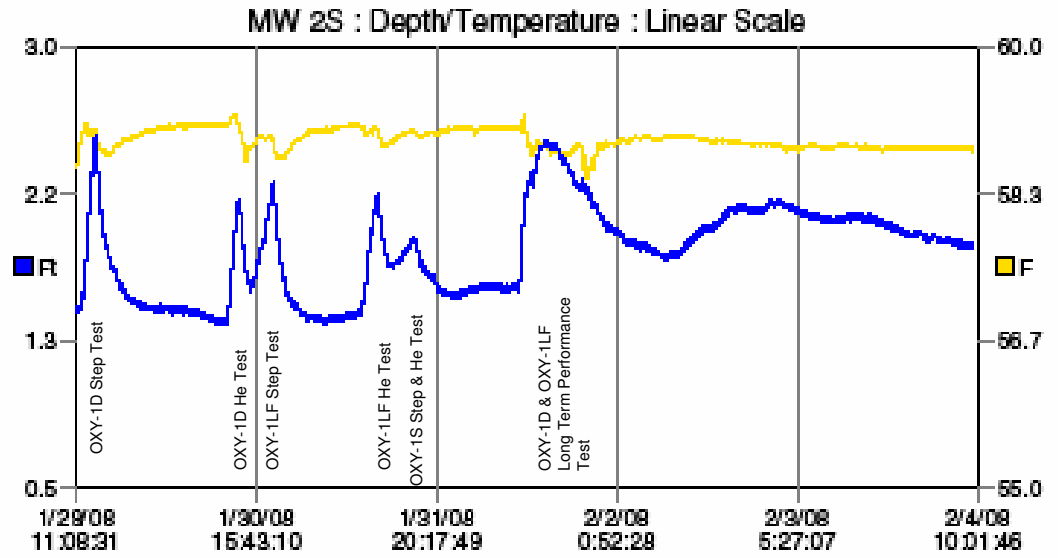

MW 2D : pH/ORP : Linear Scale
7.00
6.83
6.67
6.50
-100
-266
-433
-600
pH
mV
1/29/08 11:10:58
1/30/08 15:46:40
1/31/08 20:22:22
2/2/08 0:58:04
2/3/08 5:33:46
2/4/08 10:09:28

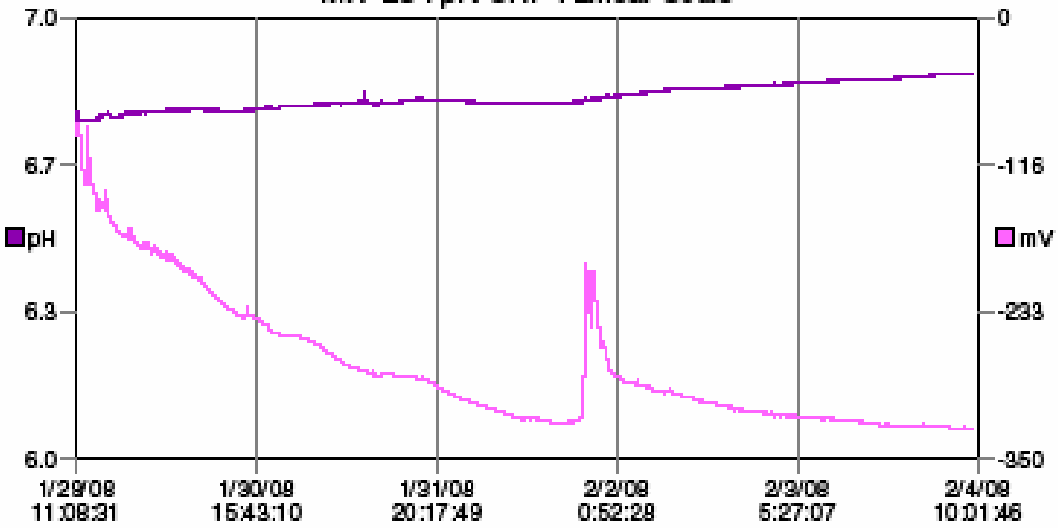

MW 2D : Dissolved Oxygen : Linear Scale
5.0
3.3
1.7
0.0
%
1/29/08 11:10:58
1/30/08 15:46:40
1/31/08 20:22:22
2/2/08 0:58:04
2/3/08 5:33:46
2/4/08 10:09:28

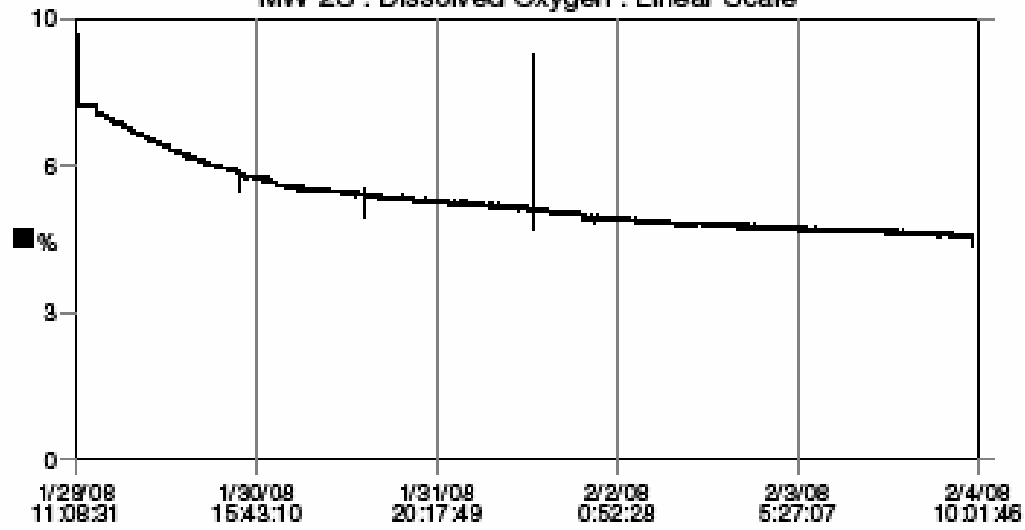

MW 2M : Depth/Temperature : Linear Scale
12.5
11.5
10.5
9.5
R
65.0
63.3
61.7
60.0
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
OXY-1S Step & He Test
OXY-1D & OXY-1LF Long Term Performance Test
1/29/08 11:05:28
1/30/08 15:57:40
1/31/08 20:49:52
2/2/08 1:42:04
2/3/08 6:34:16
2/4/08 11:26:28

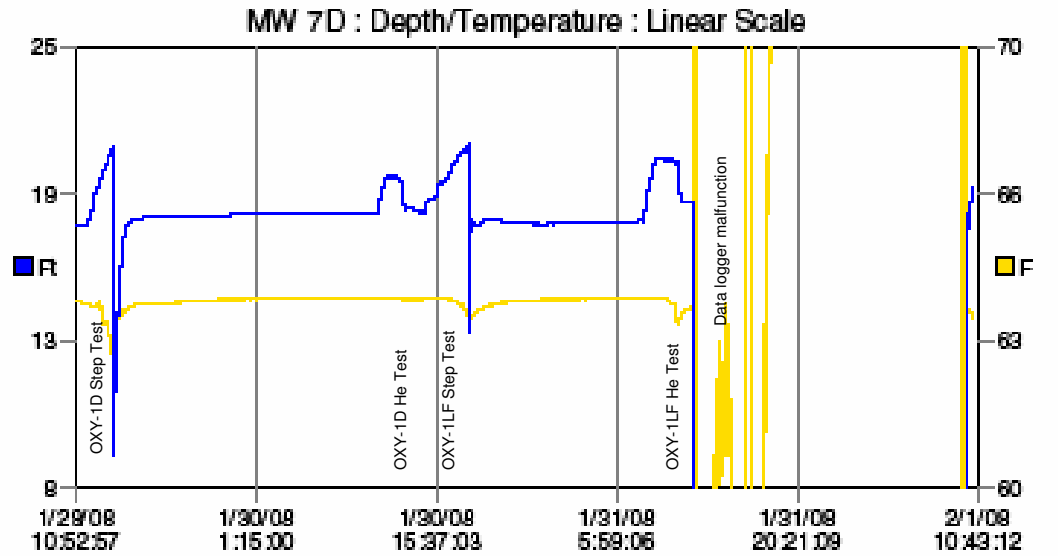

MW 2M : pH/ORP : Linear Scale
7.00
6.83
6.67
6.50
pH
-100
-183
-266
-350
mV
1/29/08 11:05:28
1/30/08 15:57:40
1/31/08 20:49:52
2/2/08 1:42:04
2/3/08 6:34:16
2/4/08 11:26:28

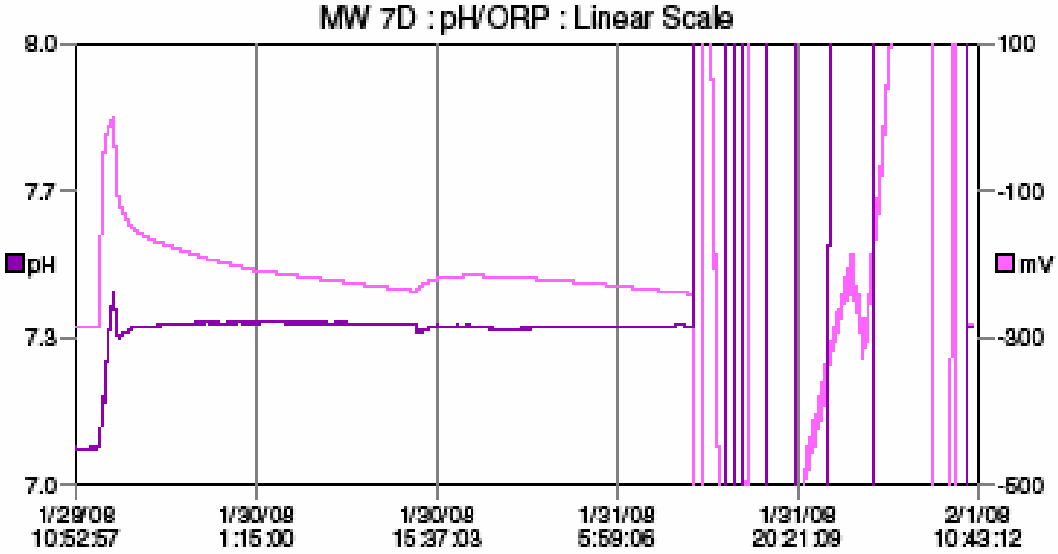

MW 2M : Dissolved Oxygen : Linear Scale
25
16
8
0
%
1/29/08 11:05:28
1/30/08 15:57:40
1/31/08 20:49:52
2/2/08 1:42:04
2/3/08 6:34:16
2/4/08 11:26:28

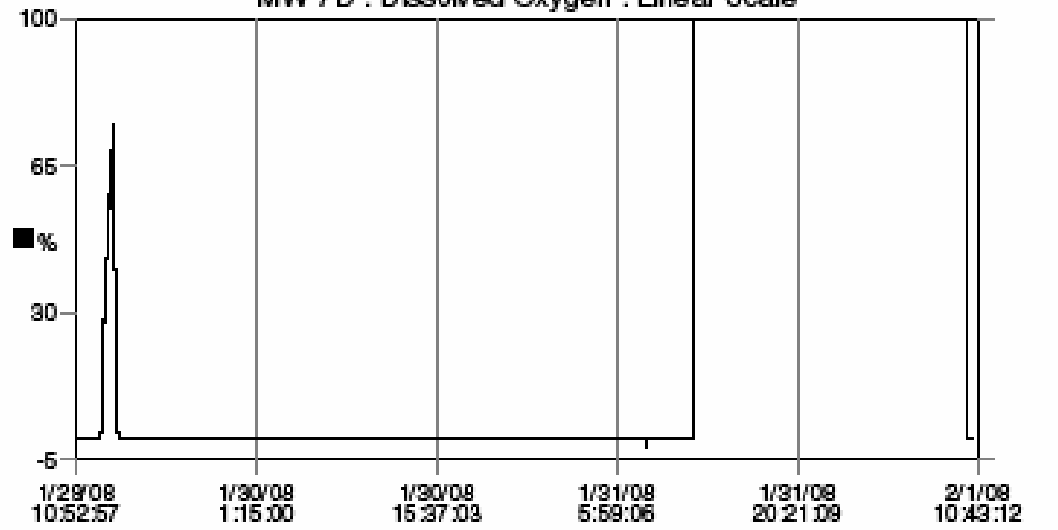

MW 2S : Depth/Temperature : Linear Scale
3.0
2.2
1.3
0.5
Ft
60.0
59.3
56.7
55.0
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
OXY-1S Step & He Test
OXY-1D & OXY-1LF Long Term Performance Test
1/29/08 11:08:31
1/30/08 15:43:10
1/31/08 20:17:49
2/2/08 0:52:28
2/3/08 5:27:07
2/4/08 10:01:46

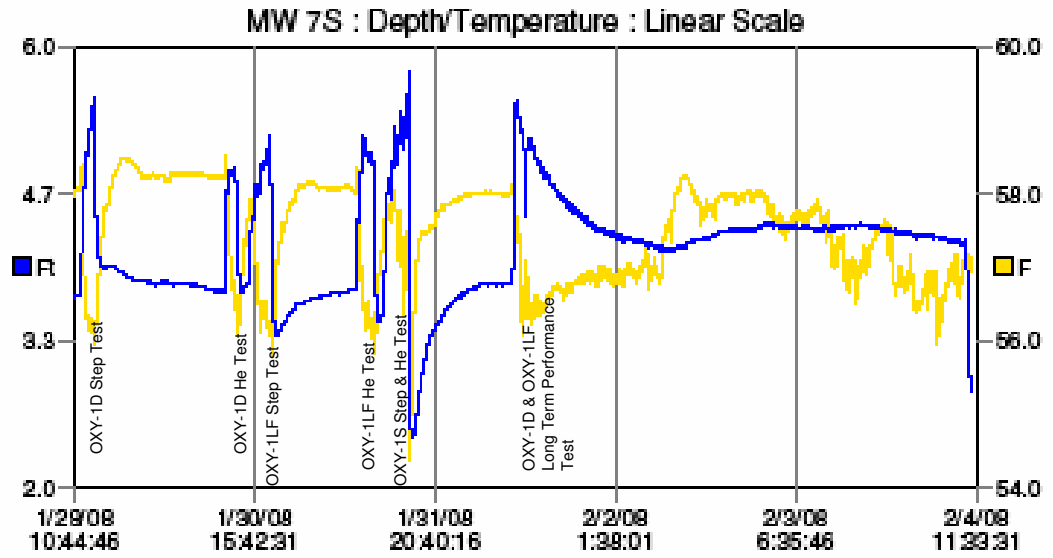

MW 2S : pH/ORP : Linear Scale
7.0
6.7
6.3
6.0
pH
0
-116
-233
-350
mV
1/29/08 11:08:31
1/30/08 15:43:10
1/31/08 20:17:49
2/2/08 0:52:28
2/3/08 5:27:07
2/4/08 10:01:46

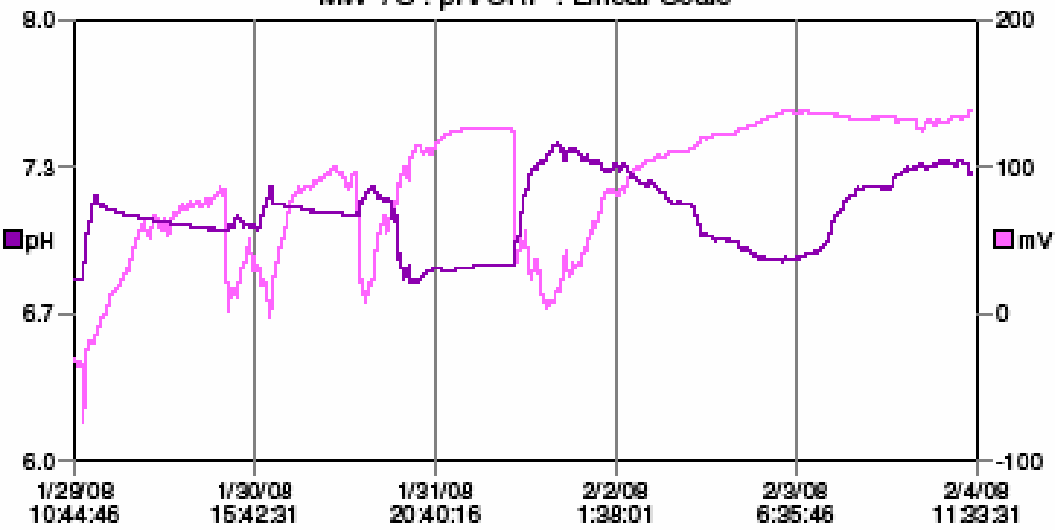

MW 2S : Dissolved Oxygen : Linear Scale
10
6
3
0
%
1/29/08 11:08:31
1/30/08 15:43:10
1/31/08 20:17:49
2/2/08 0:52:28
2/3/08 5:27:07
2/4/08 10:01:46

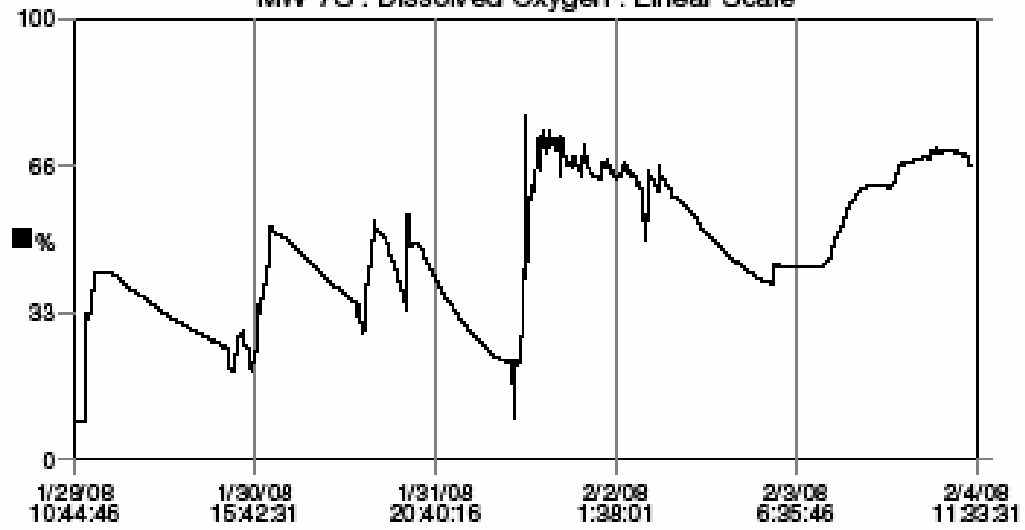

MW 7D : Depth/Temperature : Linear Scale
25
19
13
8
Ft
70
66
63
60
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
Data logger malfunction
1/29/08 10:52:57
1/30/08 1:15:00
1/30/08 15:37:03
1/31/08 5:59:06
1/31/08 20:21:09
2/1/08 10:43:12

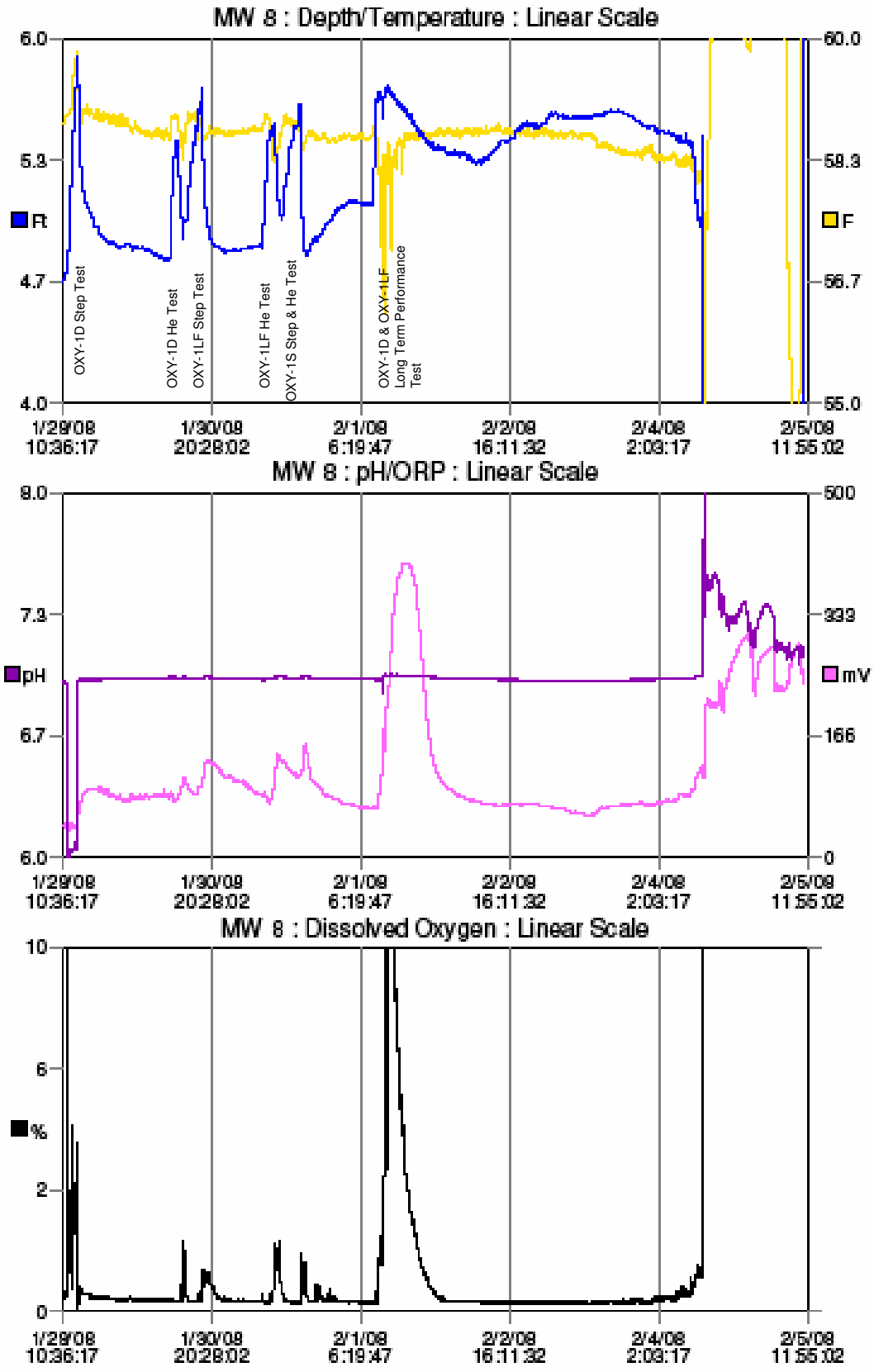

MW 7D : pH/ORP : Linear Scale
8.0
7.7
7.3
7.0
pH
100
-100
-300
-500
mV
1/29/08 10:52:57
1/30/08 1:15:00
1/30/08 15:37:03
1/31/08 5:59:06
1/31/08 20:21:09
2/1/08 10:43:12


MW 7D : Dissolved Oxygen : Linear Scale
100
65
30
-5
%
1/29/08 10:52:57
1/30/08 1:15:00
1/30/08 15:37:03
1/31/08 5:59:06
1/31/08 20:21:09
2/1/08 10:43:12


MW 7S : Depth/Temperature : Linear Scale
6.0
4.7
3.3
2.0
Ft
60.0
59.0
56.0
54.0
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
OXY-1S Step & He Test
OXY-1D & OXY-1LF Long Term Performance Test
1/29/09 10:44:46
1/30/09 15:42:31
1/31/09 20:40:16
2/2/09 1:38:01
2/3/09 6:35:46
2/4/09 11:33:31


MW 7S : pH/ORP : Linear Scale
8.0
7.3
6.7
6.0
pH
200
100
0
-100
mV
1/29/09 10:44:46
1/30/09 15:42:31
1/31/09 20:40:16
2/2/09 1:38:01
2/3/09 6:35:46
2/4/09 11:33:31


MW 7S : Dissolved Oxygen : Linear Scale
100
66
33
0
%
1/29/09 10:44:46
1/30/09 15:42:31
1/31/09 20:40:16
2/2/09 1:38:01
2/3/09 6:35:46
2/4/09 11:33:31


MW 8 : Depth/Temperature : Linear Scale
6.0
5.3
4.7
4.0
Ft
60.0
59.3
56.7
55.0
F
OXY-1D Step Test
OXY-1D He Test
OXY-1LF Step Test
OXY-1LF He Test
OXY-1S Step & He Test
OXY-1D & OXY-1LF Long Term Performance Test
1/29/08 10:36:17
1/30/08 20:28:02
2/1/08 6:19:47
2/2/08 16:11:32
2/4/08 2:03:17
2/5/08 11:55:02
MW 8 : pH/ORP : Linear Scale
8.0
7.3
6.7
6.0
pH
500
333
166
0
mV
1/29/08 10:36:17
1/30/08 20:28:02
2/1/08 6:19:47
2/2/08 16:11:32
2/4/08 2:03:17
2/5/08 11:55:02
MW 8 : Dissolved Oxygen : Linear Scale
10
6
2
0
%
1/29/08 10:36:17
1/30/08 20:28:02
2/1/08 6:19:47
2/2/08 16:11:32
2/4/08 2:03:17
2/5/08 11:55:02

APPENDIX D

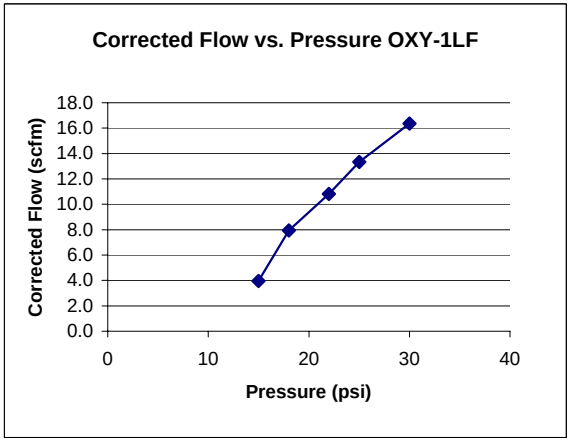
Flow versus Pressure Curves

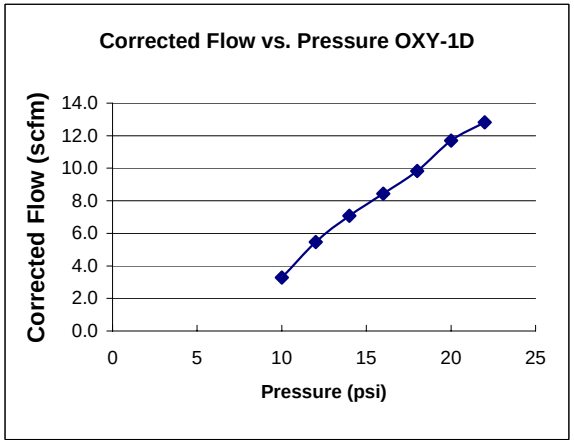
Individual Sparge Well Flow versus Pressure Curves
Hanson Aggregates Sunol Facility, Asphalt Plant
7999 Athenour Way, Sunol, California

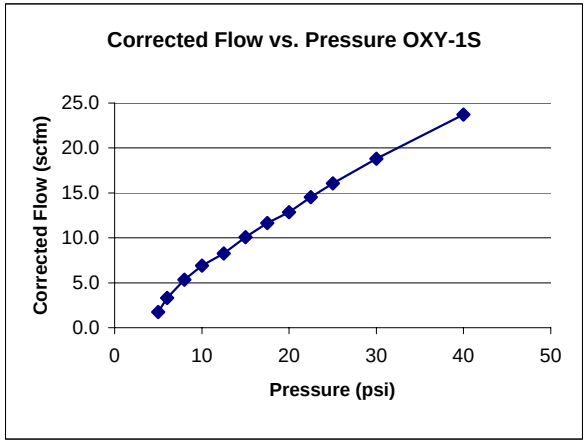
OXY-1LF			
Pressure (psi)	Flow (scfm)	Corrected Flow (scfm)	Slope (scfm/psi)
0	0	0.0	
15	2.75	4.0	
18	5.25	7.9	1.33
22	6.75	10.8	0.72
25	8	13.3	0.84
30	9.25	16.4	0.61
		Avg Slope	0.872

OXY-1D			
Pressure (psi)	Flow (scfm)	Corrected Flow (scfm)	Slope (scfm/psi)
0	0	0.0	
10	2.5	3.3	
12	4	5.5	1.09
14	5	7.1	0.81
16	5.75	8.4	0.67
18	6.5	9.8	0.70
20	7.5	11.7	0.93
22	8	12.8	0.57
		Avg Slope	0.795

OXY-1S			
Pressure (psi)	Flow (scfm)	Corrected Flow (scfm)	Slope (scfm/psi)
0	0	0.0	
5	1.5	1.8	
6	2.75	3.3	1.55
8	4.25	5.4	1.02
10	5.25	6.9	0.77
12.5	6	8.3	0.55
15	7	10.1	0.73
17.5	7.75	11.6	0.62
20	8.25	12.9	0.49
22.5	9	14.5	0.67
25	9.625	16.0	0.61
30	10.625	18.8	0.55
40	12.125	23.7	0.49
		Avg Slope	0.731







psi = pounds per square inch
scfm = standard cubic feet per minute
Corrected Flow = the actual flow for the gage pressure, gage flow, and assuming a temperature of 55 ^{o}F
Avg = average

APPENDIX E

Certified Laboratory Analytical Reports

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 200663
ANALYTICAL REPORT

LFR Levine Fricke	Project : 001-09480-06
1900 Powell Street	Location : Hanson Sunol
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW-9D	200663-001
MW-9S	200663-002
MW-9LF	200663-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 01/30/2008
Project Manager

Signature: _____ Date: 01/31/2008
Operations Manager

NELAP # 01107CA

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**200663**
Client:	**LFR Levine Fricke**
Project:	**001-09480-06**
Location:	**Hanson Sunol**
Request Date:	**01/21/08**
Samples Received:	**01/21/08**

This hardcopy data package contains sample and QC results for three water samples, requested for the above referenced project on 01/21/08. The samples were received cold and intact. All data were e-mailed to Katrin Schliewen on 01/29/08.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Total Kjeldahl Nitrogen (SM4500NH3-C):
No analytical problems were encountered.

Chemical Oxygen Demand (SM5220D):
No analytical problems were encountered.

Orthophosphate Phosphorous (SM4500P-E):
No analytical problems were encountered.

Biochemical Oxygen Demand (SM5210B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	01/21/08
Units:	ug/L	Received:	01/21/08
Diln Fac:	1.000	Prepared:	01/22/08
Batch#:	134009	Analyzed:	01/24/08

Field ID: MW-9D
Type: SAMPLE
Lab ID: 200663-001

Analyte	Result	RL
Diesel C10-C24	4,700 Y	50

Surrogate	%REC	Limits
Hexacosane	107	61-133

Field ID: MW-9S
Type: SAMPLE
Lab ID: 200663-002

Analyte	Result	RL
Diesel C10-C24	540 Y	50

Surrogate	%REC	Limits
Hexacosane	96	61-133

Field ID: MW-9LF
Type: SAMPLE
Lab ID: 200663-003

Analyte	Result	RL
Diesel C10-C24	100 Y	50

Surrogate	%REC	Limits
Hexacosane	98	61-133

Type: BLANK
Lab ID: QC425101

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	112	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC425102	Batch#:	134009
Matrix:	Water	Prepared:	01/22/08
Units:	ug/L	Analyzed:	01/24/08

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,604	64	58-128

Surrogate	%REC	Limits
Hexacosane	80	61-133

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Batch#:	134009
MSS Lab ID:	200624-001	Sampled:	01/17/08
Matrix:	Water	Received:	01/18/08
Units:	ug/L	Prepared:	01/22/08
Diln Fac:	1.000	Analyzed:	01/24/08

Type: MS Lab ID: QC425103

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	31.92	2,500	1,784	70	58-129

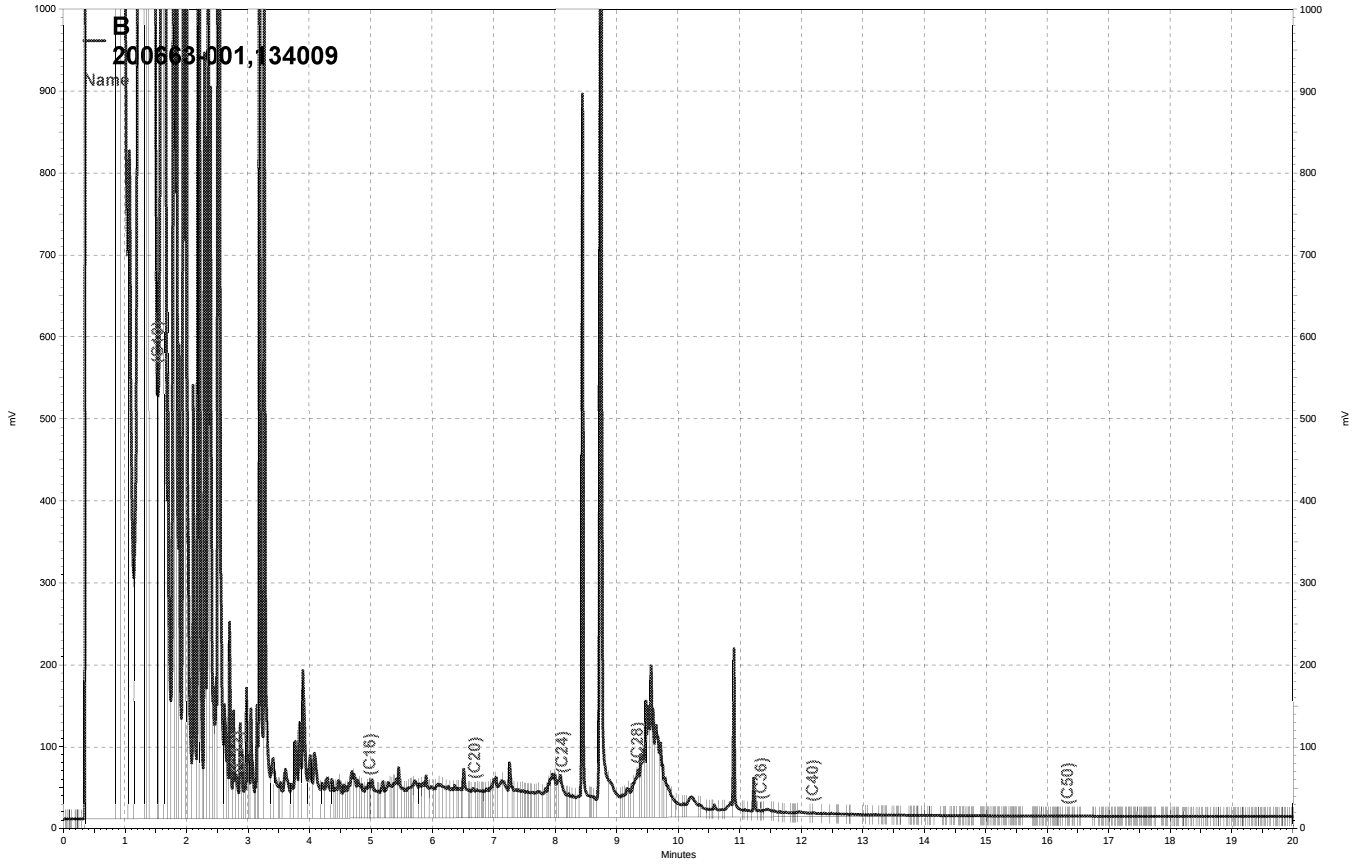
Surrogate	%REC	Limits
Hexacosane	71	61-133

Type: MSD Lab ID: QC425104

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,049	81	58-129	14	27

Surrogate	%REC	Limits
Hexacosane	97	61-133

RPD= Relative Percent Difference



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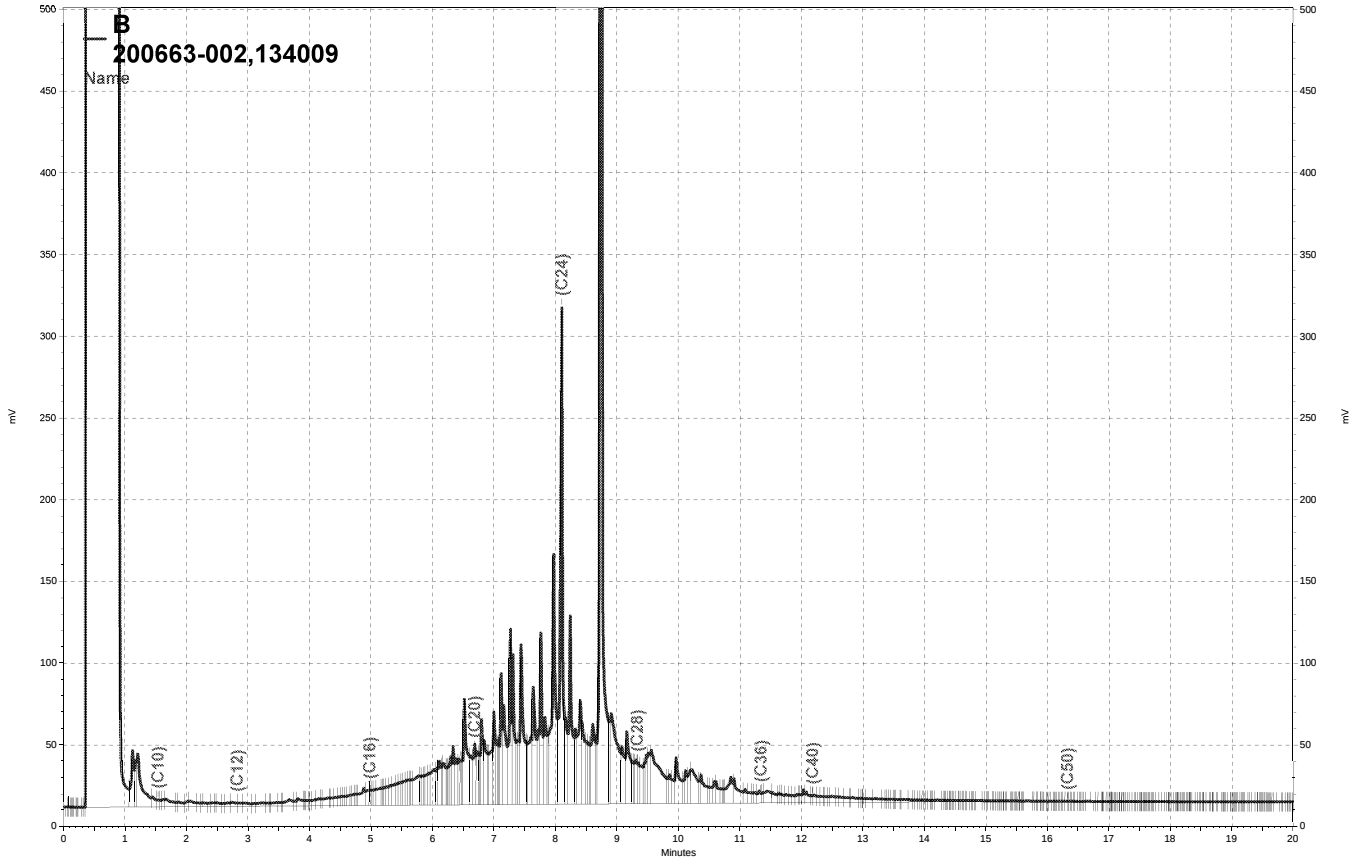

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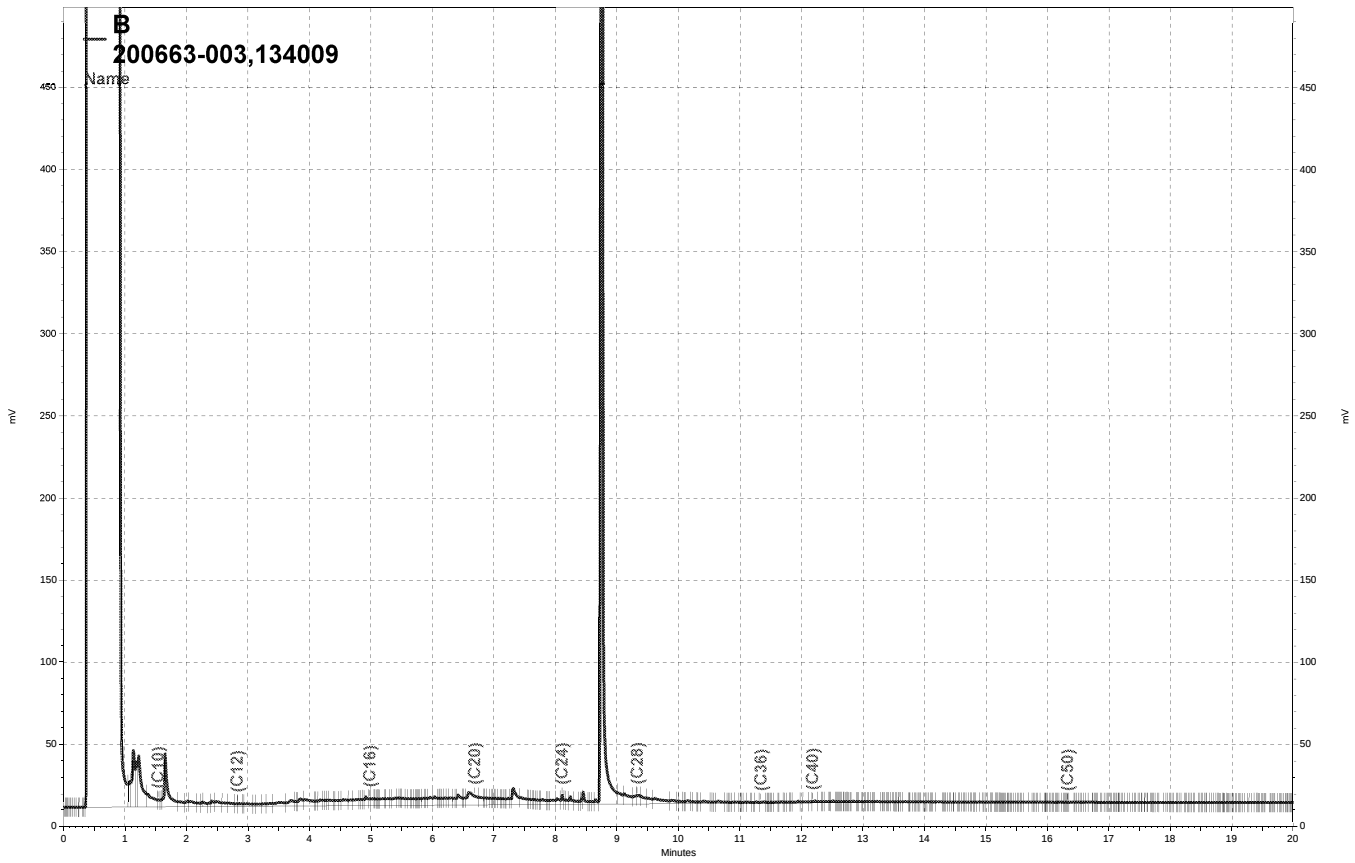

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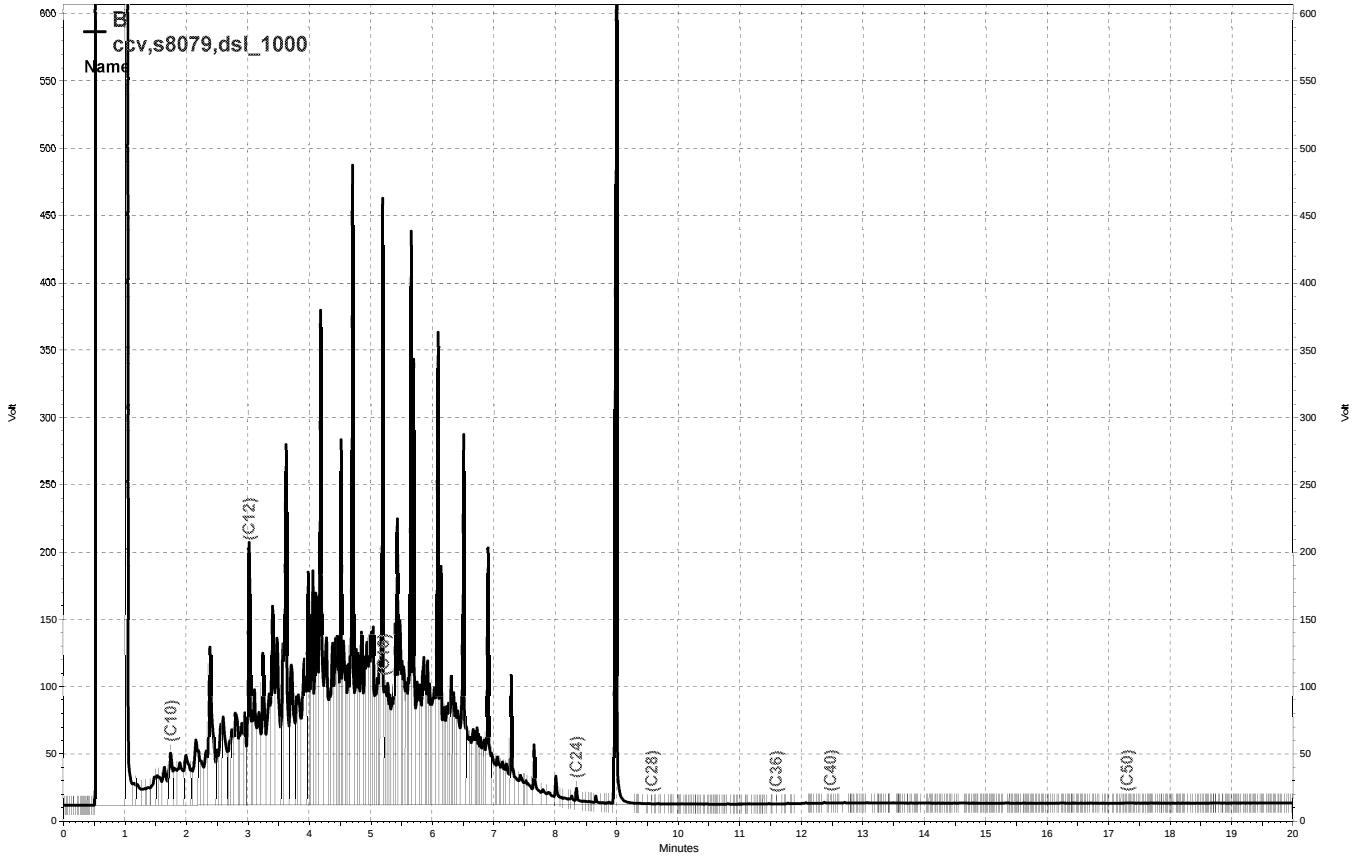

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Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/21/08
Units:	ug/L	Received:	01/21/08

Field ID: MW-9D
Type: SAMPLE
Lab ID: 200663-001

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	54,000	1,000	20.00	134019	01/23/08
MTBE	ND	10	20.00	134019	01/23/08
Benzene	1,000	10	20.00	134019	01/23/08
Toluene	3,100	20	40.00	134061	01/24/08
Ethylbenzene	2,300	20	40.00	134061	01/24/08
m,p-Xylenes	4,300	20	40.00	134061	01/24/08
o-Xylene	950	10	20.00	134019	01/23/08

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	102	80-122	20.00	134019	01/23/08
1,2-Dichloroethane-d4	112	74-137	20.00	134019	01/23/08
Toluene-d8	103	80-120	20.00	134019	01/23/08
Bromofluorobenzene	100	80-120	20.00	134019	01/23/08

Field ID: MW-9S
Type: SAMPLE
Lab ID: 200663-002
Diln Fac: 1.000
Batch#: 134019
Analyzed: 01/23/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	112	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	101	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/21/08
Units:	ug/L	Received:	01/21/08

Field ID:	MW-9LF	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	134061
Lab ID:	200663-003	Analyzed:	01/24/08

Analyte	Result	RL
Gasoline C7-C12	90	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	0.92	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	100	80-120

Type:	BLANK	Batch#:	134019
Lab ID:	QC425160	Analyzed:	01/23/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	102	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/21/08
Units:	ug/L	Received:	01/21/08

Type:	BLANK	Batch#:	134061
Lab ID:	QC425292	Analyzed:	01/24/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-122
1,2-Dichloroethane-d4	108	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134019
Units:	ug/L	Analyzed:	01/23/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425132

Analyte	Spiked	Result	%REC	Limits
MTBE	30.00	29.73	99	60-130
Benzene	30.00	33.83	113	80-120
Toluene	30.00	32.95	110	80-122
Ethylbenzene	30.00	34.25	114	80-127
m,p-Xylenes	60.00	67.12	112	80-130
o-Xylene	30.00	32.98	110	80-126

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	111	74-137
Toluene-d8	104	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC425133

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	30.00	28.31	94	60-130	5	20
Benzene	30.00	30.55	102	80-120	10	20
Toluene	30.00	30.03	100	80-122	9	20
Ethylbenzene	30.00	30.88	103	80-127	10	20
m,p-Xylenes	60.00	61.34	102	80-130	9	20
o-Xylene	30.00	30.39	101	80-126	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	109	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134019
Units:	ug/L	Analyzed:	01/23/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425134

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,112	111	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC425159

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	1,030	103	80-120	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	105	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134061
Units:	ug/L	Analyzed:	01/24/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425288

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	21.55	86	60-130
Benzene	25.00	25.35	101	80-120
Toluene	25.00	25.25	101	80-122
Ethylbenzene	25.00	25.63	103	80-127
m,p-Xylenes	50.00	50.51	101	80-130
o-Xylene	25.00	25.25	101	80-126

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC425289

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	21.75	87	60-130	1	20
Benzene	25.00	23.95	96	80-120	6	20
Toluene	25.00	24.82	99	80-122	2	20
Ethylbenzene	25.00	24.64	99	80-127	4	20
m,p-Xylenes	50.00	49.63	99	80-130	2	20
o-Xylene	25.00	24.88	100	80-126	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	100	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134061
Units:	ug/L	Analyzed:	01/24/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425290

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,500	1,557	104	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC425291

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,500	1,535	102	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

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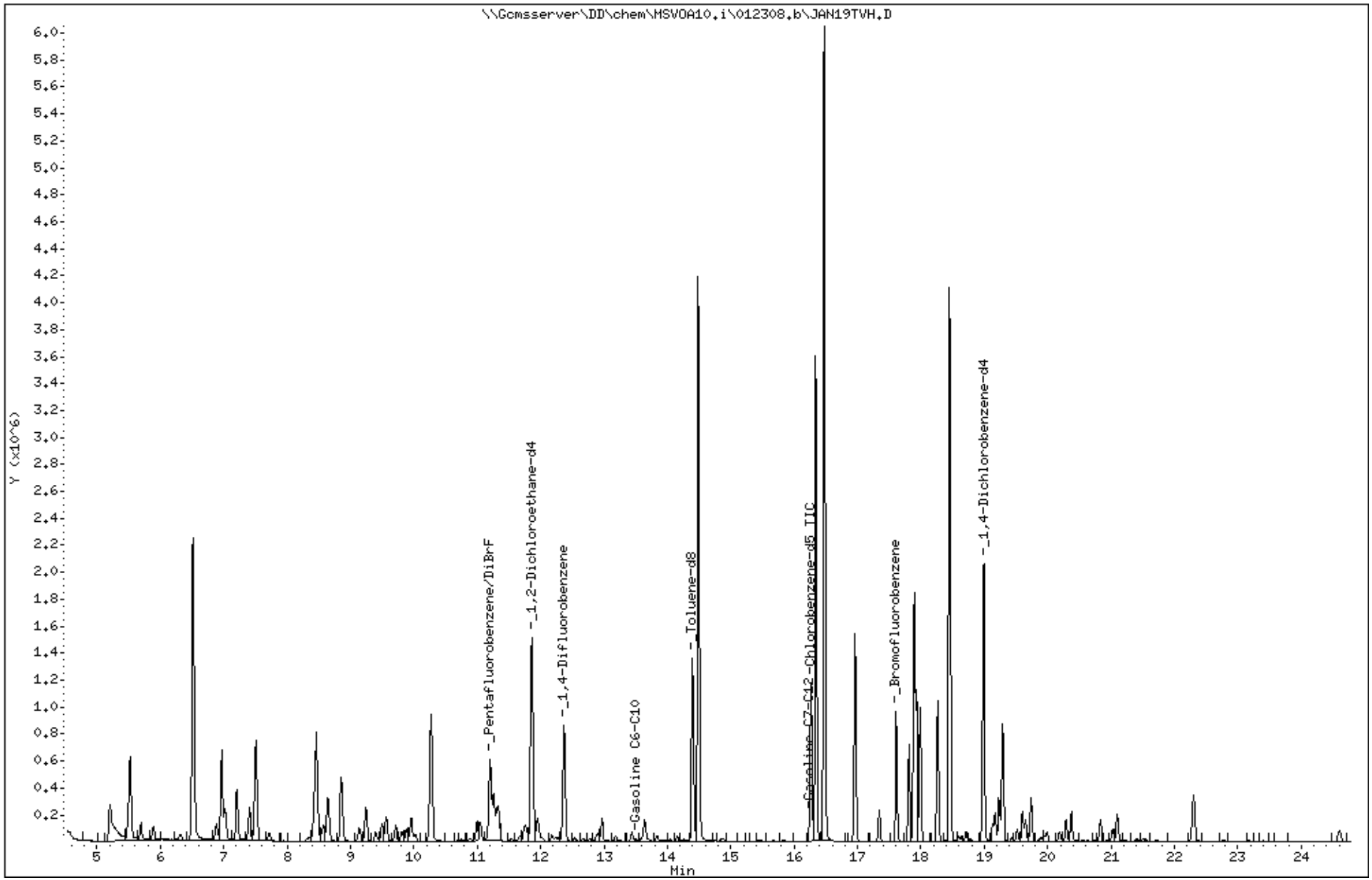
Date : 23-JAN-2008 18:07
Client ID: DYNA P&T
Sample Info: S,200663-001

Column phase:

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00



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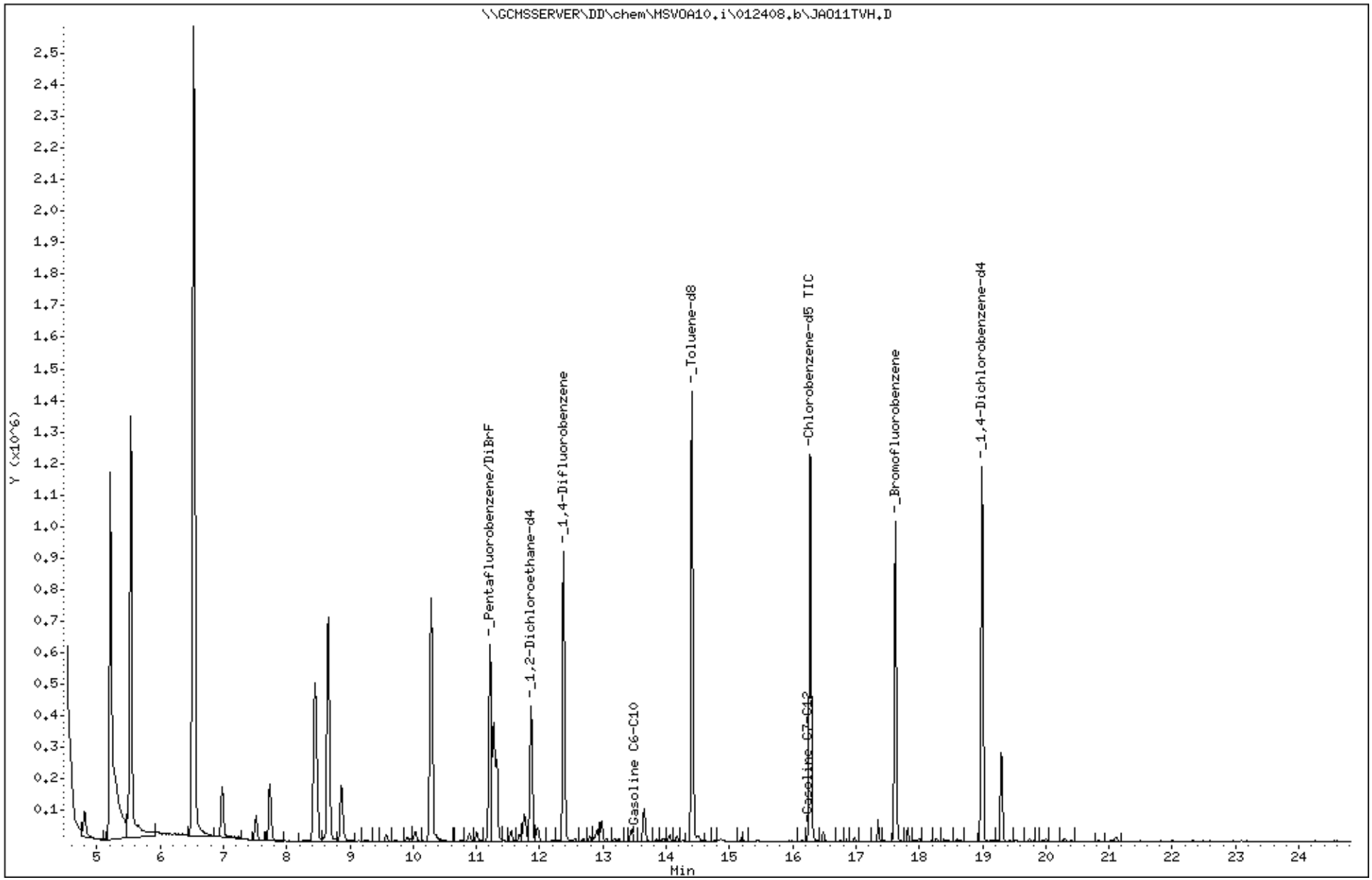
Date : 24-JAN-2008 13:33
Client ID: DYNA P&T
Sample Info: S,200663-003

Column phase:

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00



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Sample Info: CCV/BS,QC425134

Instrument: MSVOA10.i
Operator: VOA
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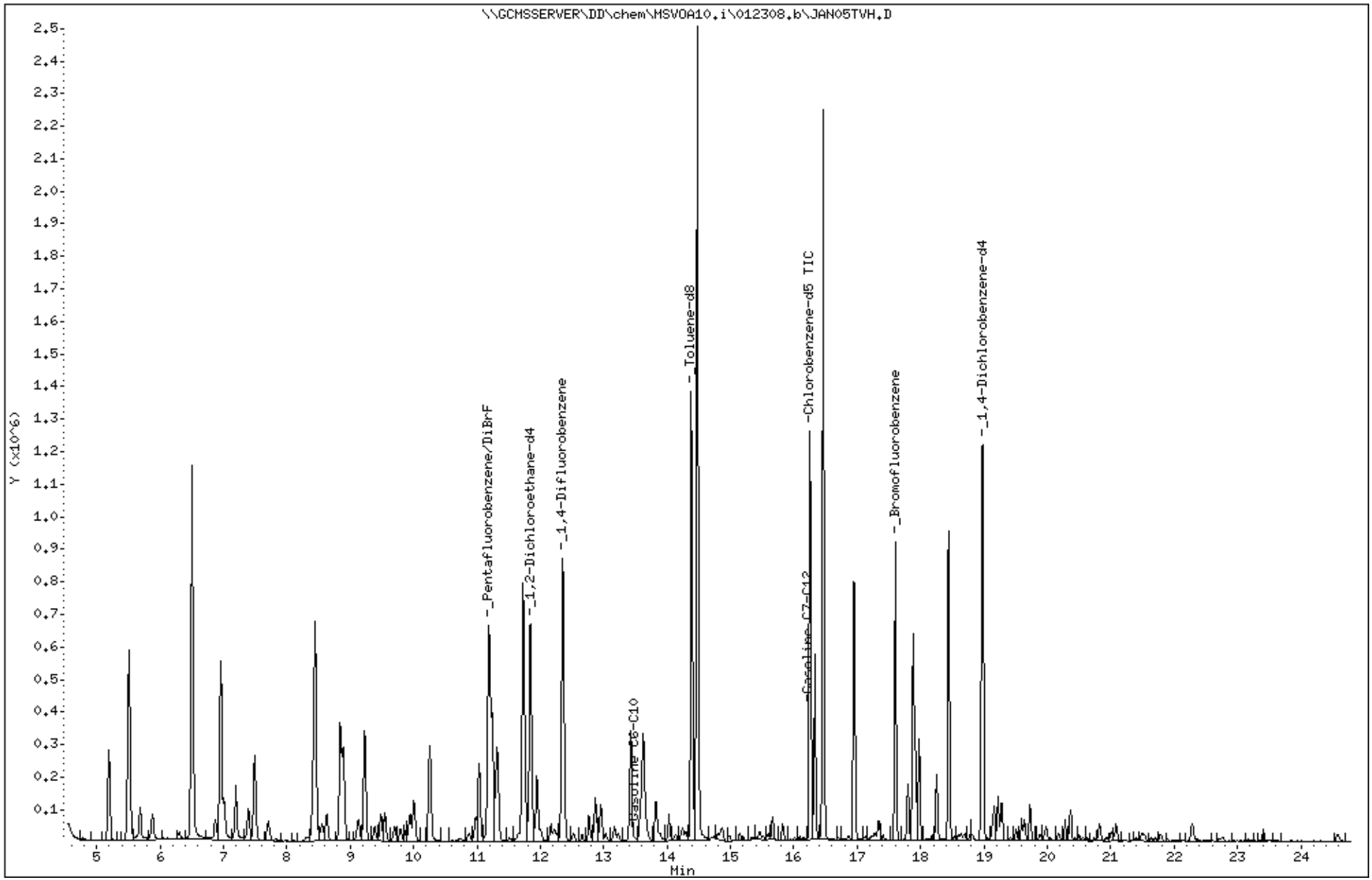


Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Batch#:	133954
Matrix:	Water	Received:	01/21/08
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled	Analyzed
MW-9D	SAMPLE	200663-001	ND	0.10	2.000	01/21/08 12:35	01/21/08 18:38
MW-9S	SAMPLE	200663-002	ND	0.10	2.000	01/21/08 13:35	01/21/08 20:25
MW-9LF	SAMPLE	200663-003	ND	0.10	2.000	01/21/08 14:35	01/21/08 22:10
	BLANK	QC424843	ND	0.05	1.000		01/21/08 14:26

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	133954
MSS Lab ID:	200633-002	Sampled:	01/17/08 09:10
Matrix:	Water	Received:	01/18/08

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC424844		1.000	1.008	101	80-120			1.000	01/21/08 14:47
BSD	QC424845		1.000	1.027	103	80-120	2	20	1.000	01/21/08 15:05
MS	QC424848	27.00	5.000	31.96	99 NM	80-120			10.00	01/21/08 16:55
MSD	QC424849		5.000	31.48	90 NM	80-120	2	20	10.00	01/21/08 17:13

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrite Nitrogen

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrite	Batch#:	133954
Matrix:	Water	Received:	01/21/08
Units:	mg/L		

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled	Analyzed
MW-9D	SAMPLE	200663-001	ND	0.10	2.000	01/21/08 12:35	01/21/08 18:38
MW-9S	SAMPLE	200663-002	ND	0.10	2.000	01/21/08 13:35	01/21/08 20:25
MW-9LF	SAMPLE	200663-003	ND	0.10	2.000	01/21/08 14:35	01/21/08 22:10
	BLANK	QC424843	ND	0.05	1.000		01/21/08 14:26

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrite Nitrogen

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrite	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	133954
MSS Lab ID:	200633-002	Sampled:	01/17/08 09:10
Matrix:	Water	Received:	01/18/08

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC424844		1.000	1.019	102	80-120			1.000	01/21/08 14:47
BSD	QC424845		1.000	1.028	103	80-120	1	20	1.000	01/21/08 15:05
MS	QC424848	<0.1089	5.000	4.862	97	80-120			10.00	01/21/08 16:55
MSD	QC424849		5.000	5.016	100	80-120	3	20	10.00	01/21/08 17:13

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Biochemical Oxygen Demand

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	134034
Matrix:	Water	Received:	01/21/08
Units:	mg/L	Prepared:	01/23/08 12:00
Diln Fac:	1.000	Analyzed:	01/28/08 14:00

Field ID	Type	Lab ID	Result	RL	Sampled
MW-9D	SAMPLE	200663-001	23	5.0	01/21/08 12:35
MW-9S	SAMPLE	200663-002	ND	5.0	01/21/08 13:35
MW-9LF	SAMPLE	200663-003	13	5.0	01/21/08 14:35
	BLANK	QC425183	ND	5.0	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Biochemical Oxygen Demand

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	134034
Field ID:	MW-9LF	Sampled:	01/21/08 14:35
MSS Lab ID:	200663-003	Received:	01/21/08
Matrix:	Water	Prepared:	01/23/08 12:00
Units:	mg/L	Analyzed:	01/28/08 14:00
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC425184		198.0	170.1		86	85-115		
BSD	QC425185		198.0	183.6		93	85-115	8	20
SDUP	QC425186	12.97		12.74	5.000			2	22

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chemical Oxygen Demand

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	133993
Matrix:	Water	Received:	01/21/08
Units:	mg/L	Prepared:	01/22/08 12:15
Diln Fac:	1.000	Analyzed:	01/22/08 14:15

Field ID	Type	Lab ID	Result	RL	Sampled
MW-9D	SAMPLE	200663-001	56	10	01/21/08 12:35
MW-9S	SAMPLE	200663-002	ND	10	01/21/08 13:35
MW-9LF	SAMPLE	200663-003	ND	10	01/21/08 14:35
	BLANK	QC425015	ND	10	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chemical Oxygen Demand

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	133993
Field ID:	ZZZZZZZZZZ	Sampled:	01/16/08 09:30
MSS Lab ID:	200579-001	Received:	01/17/08
Matrix:	Water	Prepared:	01/22/08 12:15
Units:	mg/L	Analyzed:	01/22/08 14:15
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC425016		50.00	46.35	93	90-110		
MS	QC425017	<10.00	100.0	88.68	89	68-127		
MSD	QC425018		100.0	92.71	93	68-127	4	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Orthophosphate Phosphorous

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Batch#:	133995
Matrix:	Water	Received:	01/21/08
Units:	mg/L	Analyzed:	01/22/08 15:00
Diln Fac:	1.000		

Field ID	Type	Lab ID	Result	RL	Sampled
MW-9D	SAMPLE	200663-001	0.66	0.030	01/21/08 12:35
MW-9S	SAMPLE	200663-002	0.65	0.030	01/21/08 13:35
MW-9LF	SAMPLE	200663-003	0.35	0.030	01/21/08 14:35
	BLANK	QC425022	ND	0.030	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Orthophosphate Phosphorous

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Diln Fac:	1.000
Field ID:	MW-9LF	Batch#:	133995
MSS Lab ID:	200663-003	Sampled:	01/21/08 14:35
Matrix:	Water	Received:	01/21/08
Units:	mg/L	Analyzed:	01/22/08 15:00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC425023		0.2000	0.2138	107	80-120		
MS	QC425024	0.3488	0.2000	0.5650	108	80-127		
MSD	QC425025		0.2000	0.5712	111	80-127	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Kjeldahl Nitrogen

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	SMWW20:4500-NORG
Project#:	001-09480-06	Analysis:	SM4500NH3-C
Analyte:	Nitrogen, Total Kjeldahl	Sampled:	01/21/08
Matrix:	Water	Received:	01/21/08
Units:	mg/L	Prepared:	01/22/08
Diln Fac:	1.000	Analyzed:	01/23/08
Batch#:	134040		

Field ID	Type	Lab ID	Result	RL
MW-9D	SAMPLE	200663-001	ND	1.0
MW-9S	SAMPLE	200663-002	ND	1.0
MW-9LF	SAMPLE	200663-003	ND	1.0
	BLANK	QC425206	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Kjeldahl Nitrogen

Lab #:	200663	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	SMWW20:4500-NORG
Project#:	001-09480-06	Analysis:	SM4500NH3-C
Analyte:	Nitrogen, Total Kjeldahl	Batch#:	134040
Field ID:	ZZZZZZZZZZ	Sampled:	01/16/08
MSS Lab ID:	200579-001	Received:	01/17/08
Matrix:	Water	Prepared:	01/22/08
Units:	mg/L	Analyzed:	01/23/08
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC425207		10.00	9.520	95	70-130		
MS	QC425208	4.700	10.00	13.44	87	70-130		
MSD	QC425209		10.00	12.88	82	70-130	4	30

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

CHAIN OF CUSTODY

C & T LOGIN #: 200663

Project No.: 001-09480-06
Project Name: Hanson Surf
Project P.O.: 001-09480-06
Turnaround Time: Standard / Short *

Sampler: ENW
Report To: Katrin Schlieven
Company: LFR, Inc
Telephone: 510 652 4500
Fax: 510 652 2246

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Analysis: TPH d (4015M)	Analysis: TPHg/BTEX / MTBE (8260B)	Analysis: Nitrate & Nitrite (300.0)	Analysis: TKN (SM 4500 NH3-C)	Analysis: BOD (5210B)	Analysis: COD (SM 5220D)	Analysis: Ortho Phosphate (SM4500P-E)
1	MW-9D	1/21/08 1235		X		8	X	X			X	X	X	X	X	X	X
2	MW-9S	1/21/08 1335		X		8	X	X			X	X	X	X	X	X	X
3	MW-9LE	1/21/08 1435		X		4	X	X			X	X	X	X	X	X	X

Notes: * short holdtimes

SAMPLE RECEIPT
Intact Cold
On Ice Ambient
Preservative Correct?
Yes No N/A

RELINQUISHED BY: DATE / TIME 1/21/08 1738
DATE / TIME
DATE / TIME

RECEIVED BY: DATE / TIME 1/21/08 17:38
DATE / TIME
DATE / TIME

SIGNATURE

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 200663 Date Received: 01/21/08 Number of Coolers: 1
Client: LFR Project: HANSON SUNOL

A. Preliminary Examination Phase
Date Opened: 01/21/08 By (print): M. VILLANUEVA (sign)

1. Did cooler come with a shipping slip (airbill, etc.)? YES NO
If YES, enter carrier name and airbill number:
2. Were custody seals on outside of cooler? YES NO
How many and where? Seal date: Seal name:
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO N/A
4. Were custody papers dry and intact when received? YES NO
5. Were custody papers filled out properly (ink, signed, etc.)? YES NO
6. Did you sign the custody papers in the appropriate place? YES NO
7. Was project identifiable from custody papers? YES NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: FOAM BLOCK
9. If required, was sufficient ice used? Samples should be <=6 degrees C. YES NO
Type of ice: WET Temperature: 4.5
10. Were Encore sampling devices present in the cooler? YES NO
If YES, enter time they were transferred to the freezer

B. Login Phase
Date Logged In: 01/21/08 By (print): M. VILLANUEVA (sign)

1. Did all bottles arrive unbroken? YES NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? YES NO
3. Did bottle labels agree with custody papers? YES NO
4. Were appropriate containers used for the tests indicated? YES NO
5. Were correct preservatives added to samples? YES NO
6. Was sufficient amount of sample sent for tests indicated? YES NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below YES NO
8. Was the client contacted concerning this sample delivery? YES NO
If YES, give details below.
Who was called? By whom? Date:

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 200683
ANALYTICAL REPORT

LFR Levine Fricke	Project : 001-09480-06
1900 Powell Street	Location : Hanson Sunol
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW-8	200683-001
MW-7D	200683-002
MW-7S	200683-003
MW-1	200683-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 01/30/2008
Project Manager

Signature: _____ Date: 01/31/2008
Operations Manager

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**200683**
Client:	**LFR Levine Fricke**
Project:	**001-09480-06**
Location:	**Hanson Sunol**
Request Date:	**01/22/08**
Samples Received:	**01/22/08**

This hardcopy data package contains sample and QC results for four water samples, requested for the above referenced project on 01/22/08. The samples were received cold and intact. All data were e-mailed to Katrin Schliewen on 01/29/08.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	01/22/08
Units:	ug/L	Received:	01/22/08
Diln Fac:	1.000	Prepared:	01/23/08
Batch#:	134036		

Field ID: MW-8 Lab ID: 200683-001
Type: SAMPLE Analyzed: 01/24/08

Analyte	Result	RL
Diesel C10-C24	530 Y	50

Surrogate	%REC	Limits
Hexacosane	107	61-133

Field ID: MW-7D Lab ID: 200683-002
Type: SAMPLE Analyzed: 01/24/08

Analyte	Result	RL
Diesel C10-C24	2,700 Y	50

Surrogate	%REC	Limits
Hexacosane	106	61-133

Field ID: MW-7S Lab ID: 200683-003
Type: SAMPLE Analyzed: 01/24/08

Analyte	Result	RL
Diesel C10-C24	460 Y	50

Surrogate	%REC	Limits
Hexacosane	101	61-133

Field ID: MW-1 Lab ID: 200683-004
Type: SAMPLE Analyzed: 01/28/08

Analyte	Result	RL
Diesel C10-C24	440 Y	50

Surrogate	%REC	Limits
Hexacosane	105	61-133

Type: BLANK Analyzed: 01/24/08
Lab ID: QC425191

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	110	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC425192	Batch#:	134036
Matrix:	Water	Prepared:	01/23/08
Units:	ug/L	Analyzed:	01/24/08

Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,797	72	58-128

Surrogate	%REC	Limits
Hexacosane	77	61-133

Curtis & Tompkins, Ltd.

Batch QC Report

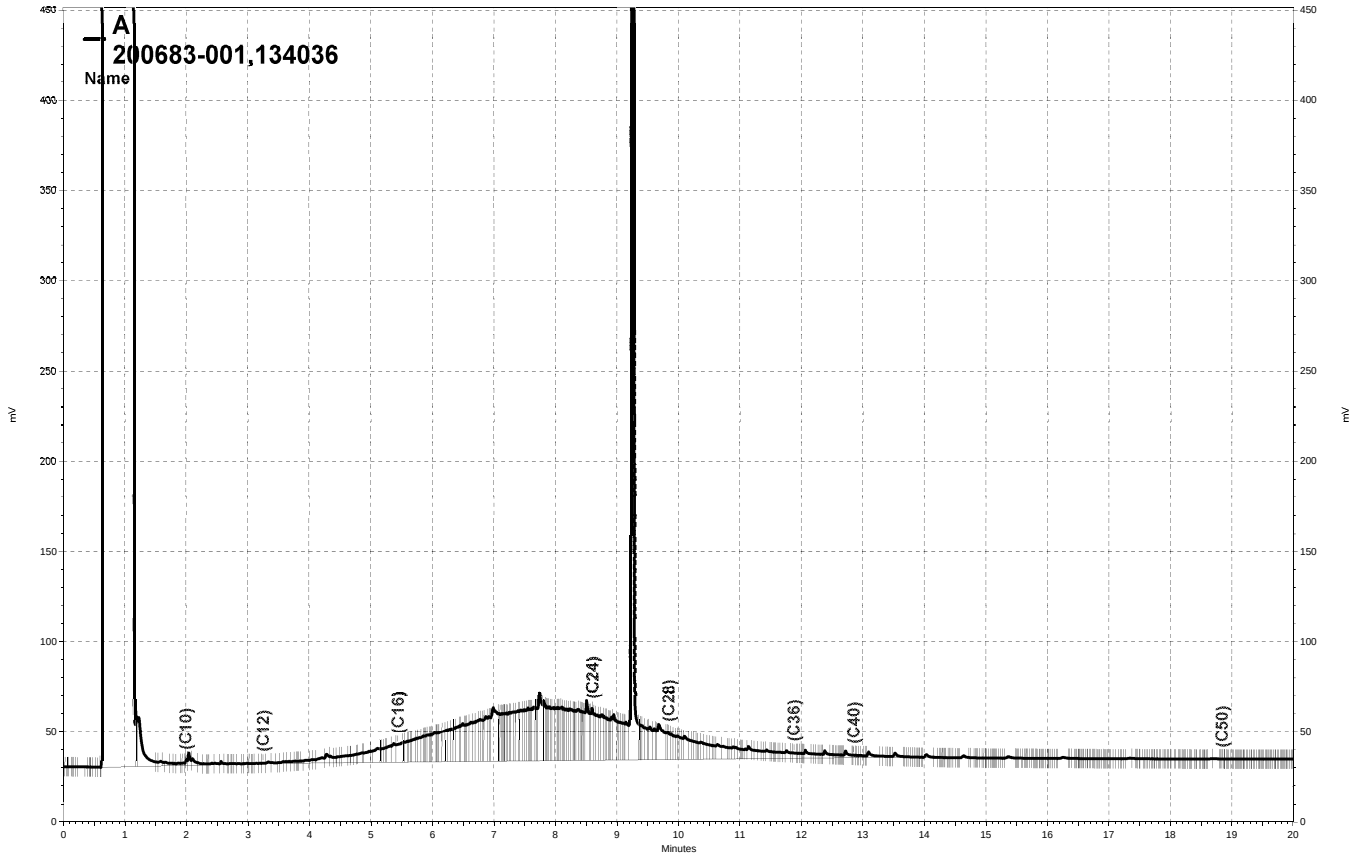
Total Extractable Hydrocarbons

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Field ID:	ZZZZZZZZZZ	Diln Fac:	1.000
Type:	SSPIKE	Batch#:	134036
MSS Lab ID:	200690-003	Sampled:	01/22/08
Lab ID:	QC425193	Received:	01/22/08
Matrix:	Water	Prepared:	01/23/08
Units:	ug/L	Analyzed:	01/24/08

Cleanup Method: EPA 3630C

Analyte	MSS Result	Spiked	Result	%REC	Limits
Diesel C10-C24	76.80	2,500	1,726	66	58-129

Surrogate	%REC	Limits
Hexacosane	79	61-133



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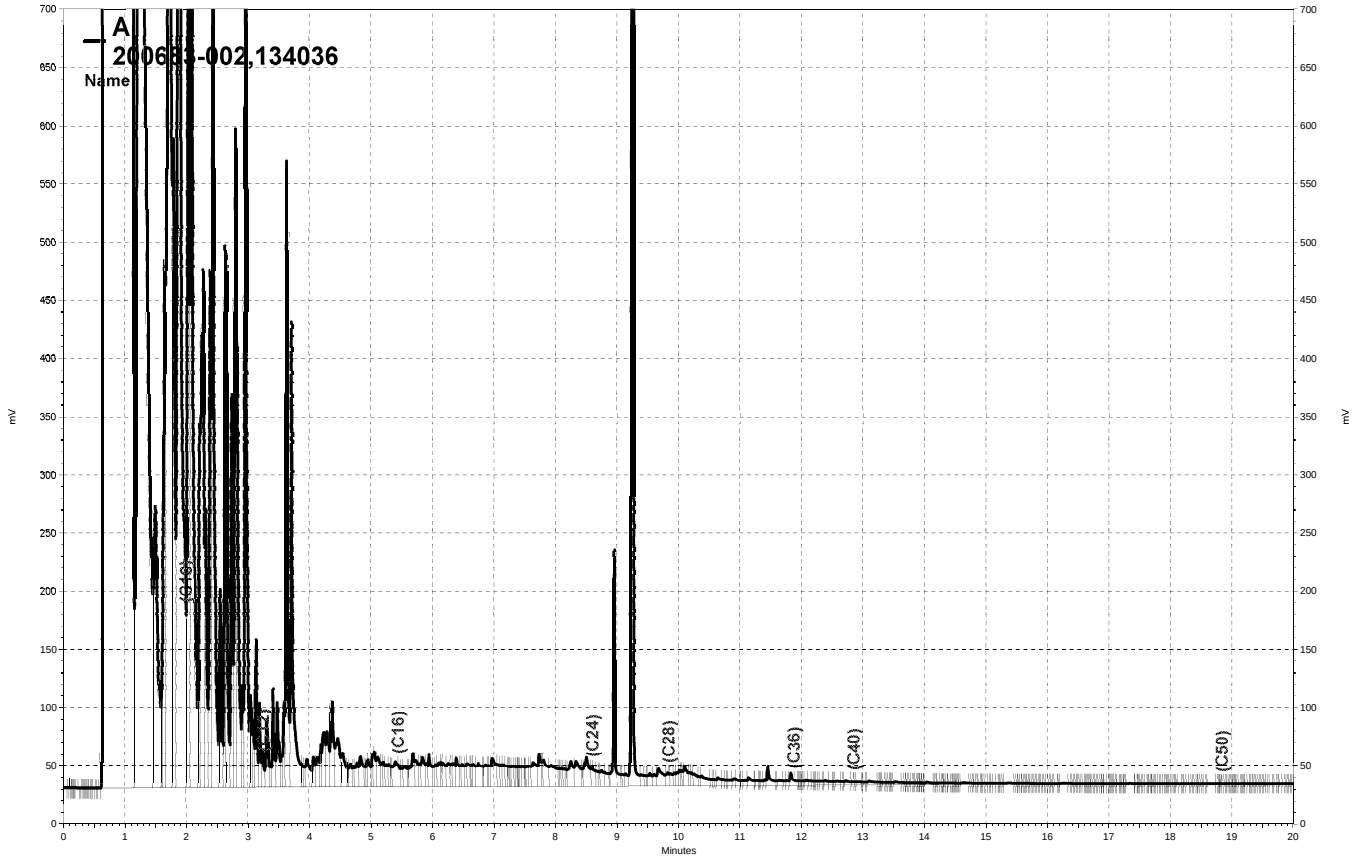

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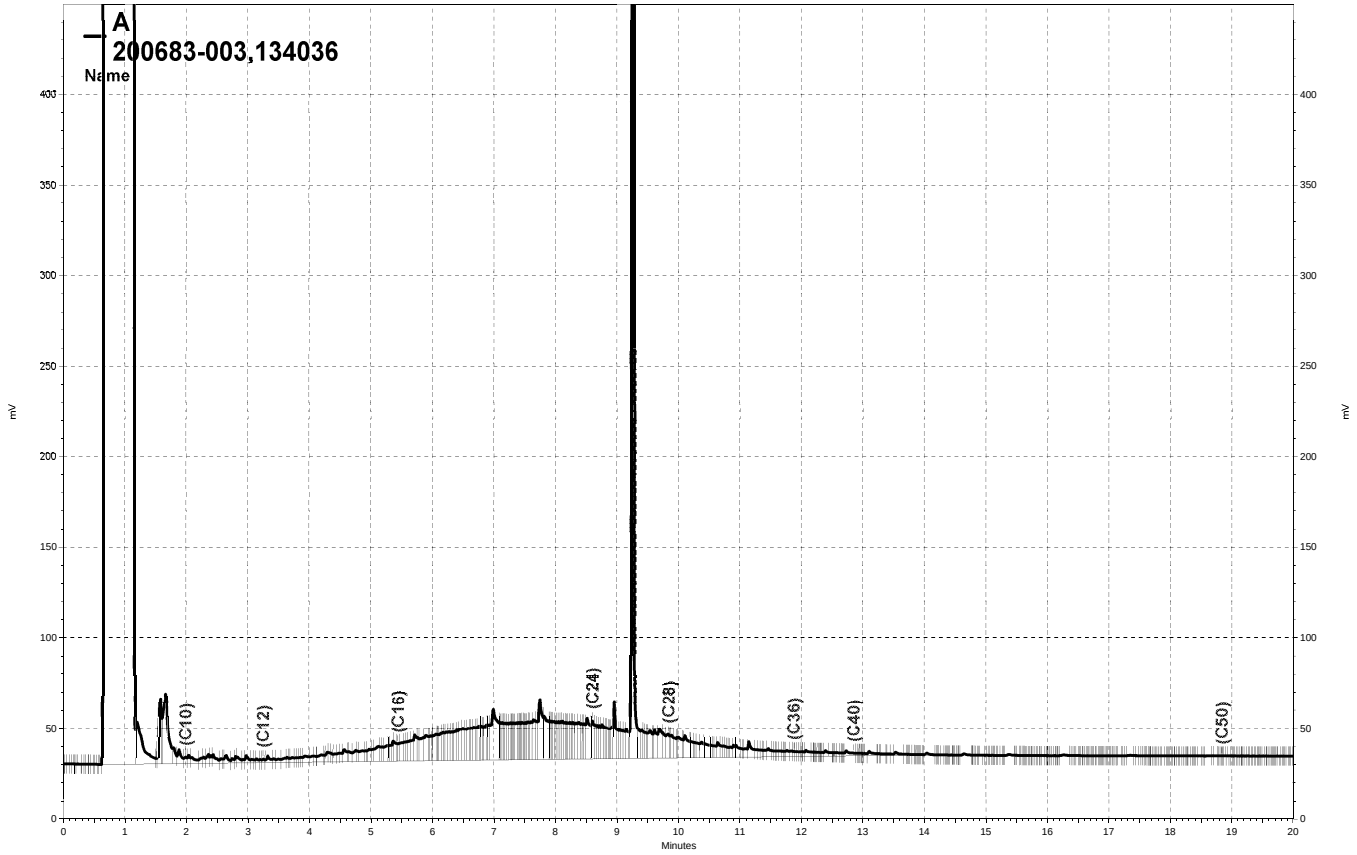

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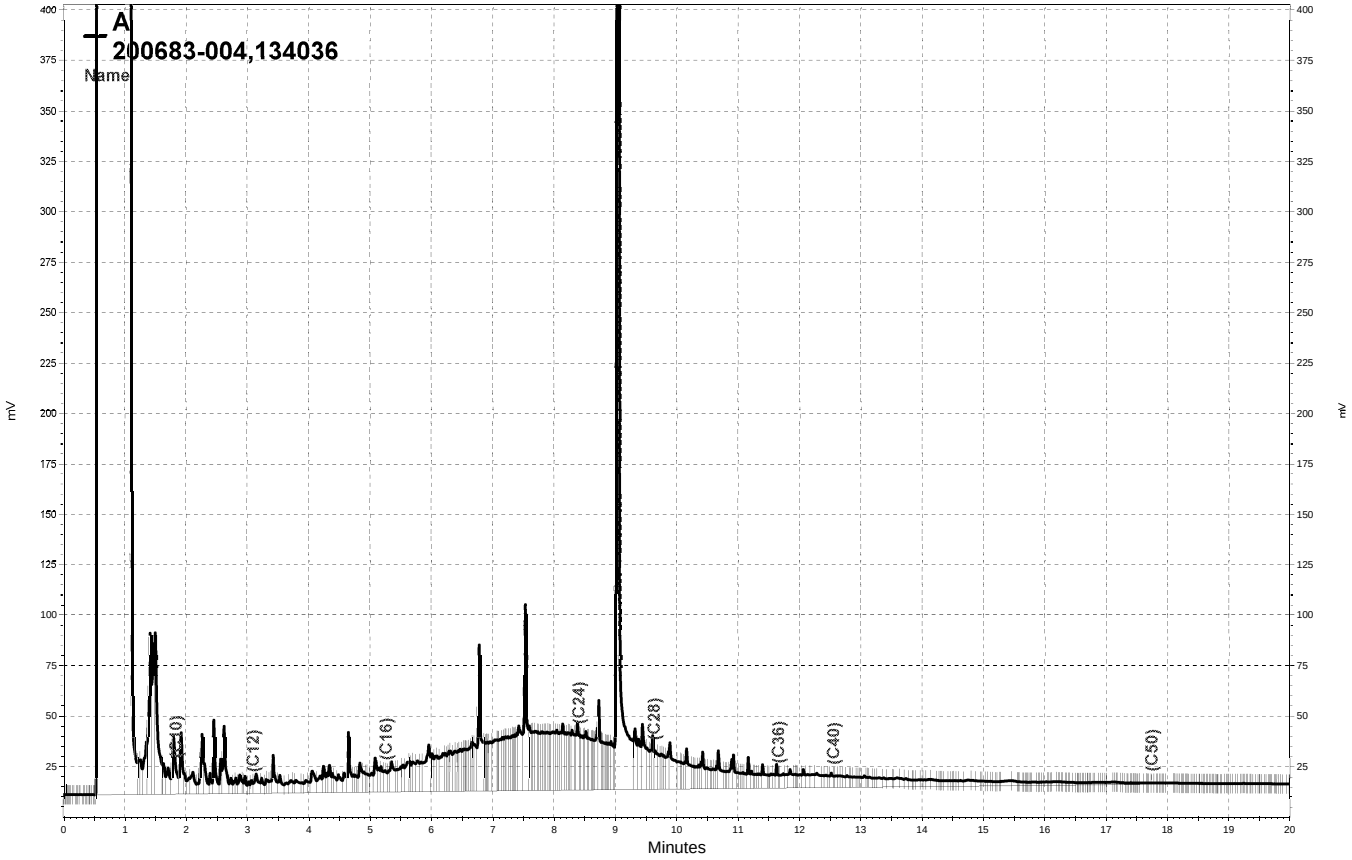

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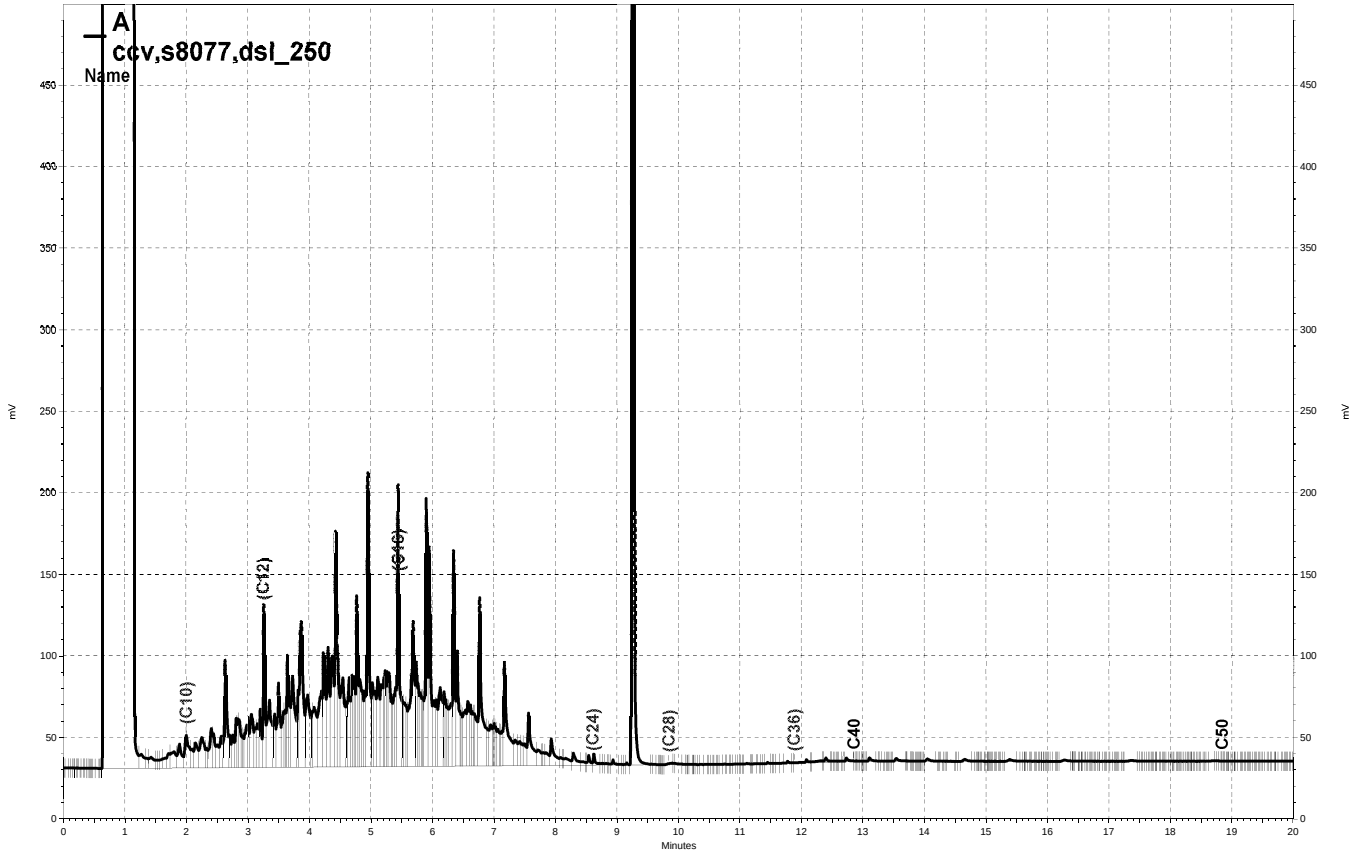

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Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/22/08
Units:	ug/L	Received:	01/22/08

Field ID:	MW-8	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	134019
Lab ID:	200683-001	Analyzed:	01/23/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	112	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	104	80-120

Field ID:	MW-7D	Diln Fac:	10.00
Type:	SAMPLE	Batch#:	134061
Lab ID:	200683-002	Analyzed:	01/24/08

Analyte	Result	RL
Gasoline C7-C12	13,000 Y	500
MTBE	ND	5.0
Benzene	47	5.0
Toluene	67	5.0
Ethylbenzene	760	5.0
m,p-Xylenes	740	5.0
o-Xylene	61	5.0

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/22/08
Units:	ug/L	Received:	01/22/08

Field ID:	MW-7S	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	134061
Lab ID:	200683-003	Analyzed:	01/24/08

Analyte	Result	RL
Gasoline C7-C12	68 Y	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	0.99	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	111	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-120

Field ID:	MW-1	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	134061
Lab ID:	200683-004	Analyzed:	01/24/08

Analyte	Result	RL
Gasoline C7-C12	460 Y	50
MTBE	ND	0.50
Benzene	4.6	0.50
Toluene	0.52	0.50
Ethylbenzene	1.3	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-122
1,2-Dichloroethane-d4	111	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	102	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/22/08
Units:	ug/L	Received:	01/22/08

Type:	BLANK	Batch#:	134019
Lab ID:	QC425160	Analyzed:	01/23/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	102	80-120

Type:	BLANK	Batch#:	134061
Lab ID:	QC425292	Analyzed:	01/24/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-122
1,2-Dichloroethane-d4	108	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134019
Units:	ug/L	Analyzed:	01/23/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425132

Analyte	Spiked	Result	%REC	Limits
MTBE	30.00	29.73	99	60-130
Benzene	30.00	33.83	113	80-120
Toluene	30.00	32.95	110	80-122
Ethylbenzene	30.00	34.25	114	80-127
m,p-Xylenes	60.00	67.12	112	80-130
o-Xylene	30.00	32.98	110	80-126

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-122
1,2-Dichloroethane-d4	111	74-137
Toluene-d8	104	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC425133

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	30.00	28.31	94	60-130	5	20
Benzene	30.00	30.55	102	80-120	10	20
Toluene	30.00	30.03	100	80-122	9	20
Ethylbenzene	30.00	30.88	103	80-127	10	20
m,p-Xylenes	60.00	61.34	102	80-130	9	20
o-Xylene	30.00	30.39	101	80-126	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-122
1,2-Dichloroethane-d4	109	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134019
Units:	ug/L	Analyzed:	01/23/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425134

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,112	111	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	97	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC425159

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	1,030	103	80-120	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	105	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134061
Units:	ug/L	Analyzed:	01/24/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425288

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	21.55	86	60-130
Benzene	25.00	25.35	101	80-120
Toluene	25.00	25.25	101	80-122
Ethylbenzene	25.00	25.63	103	80-127
m,p-Xylenes	50.00	50.51	101	80-130
o-Xylene	25.00	25.25	101	80-126

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC425289

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	21.75	87	60-130	1	20
Benzene	25.00	23.95	96	80-120	6	20
Toluene	25.00	24.82	99	80-122	2	20
Ethylbenzene	25.00	24.64	99	80-127	4	20
m,p-Xylenes	50.00	49.63	99	80-130	2	20
o-Xylene	25.00	24.88	100	80-126	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	100	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200683	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134061
Units:	ug/L	Analyzed:	01/24/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425290

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,500	1,557	104	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

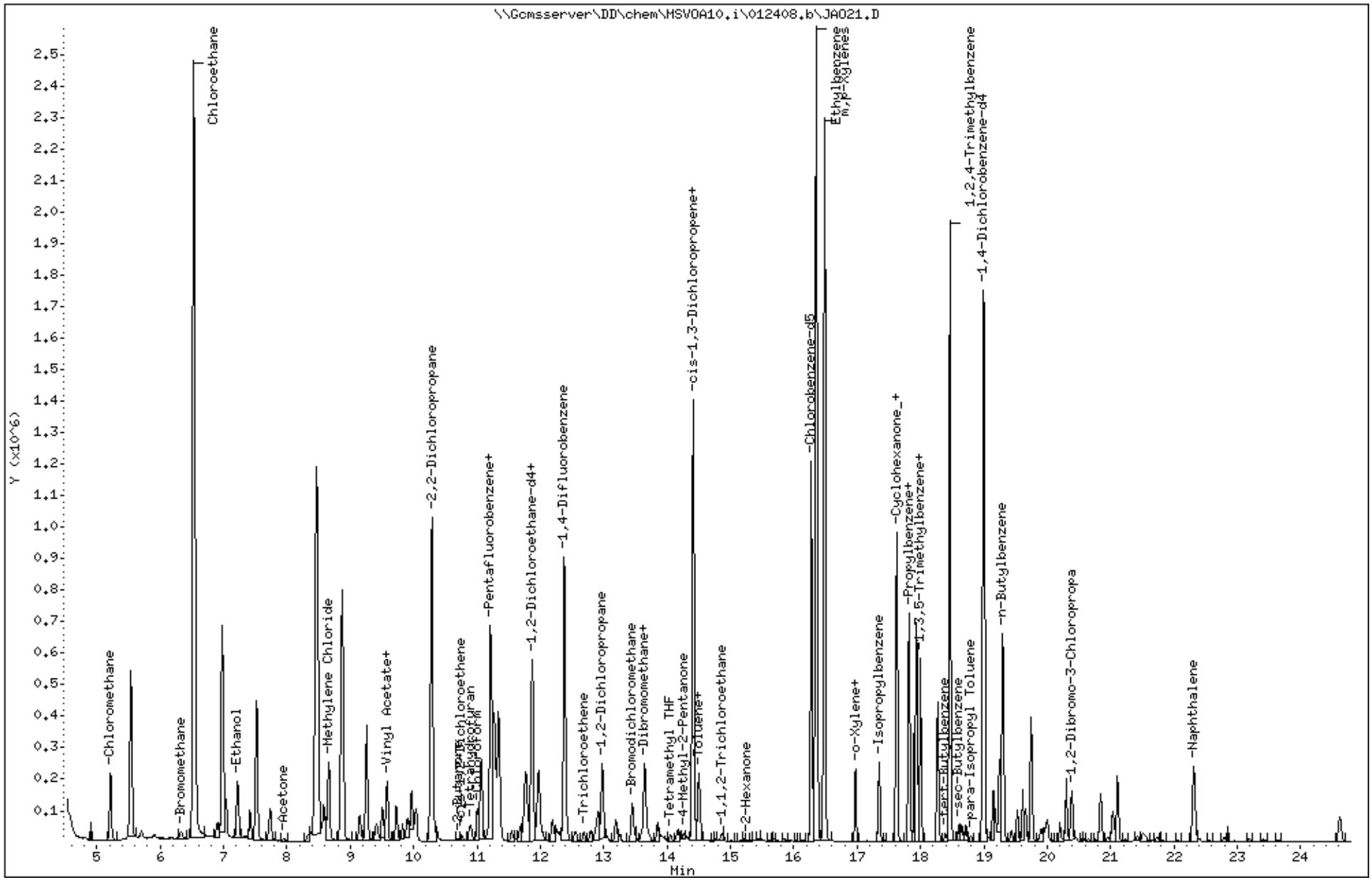
Type: BSD Lab ID: QC425291

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,500	1,535	102	80-120	1	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Data File: \\Gcmsserver\DD\chem\MSVOA10.i\012408.b\JA021.D
Date : 24-JAN-2008 19:19
Client ID: DYNA P&T
Instrument: MSVOA10.i
Sample Info: S,200683-002
Purge Volume: 5.0
Operator: VOA
Column phase: RTx Volatiles
Column diameter: 0.32

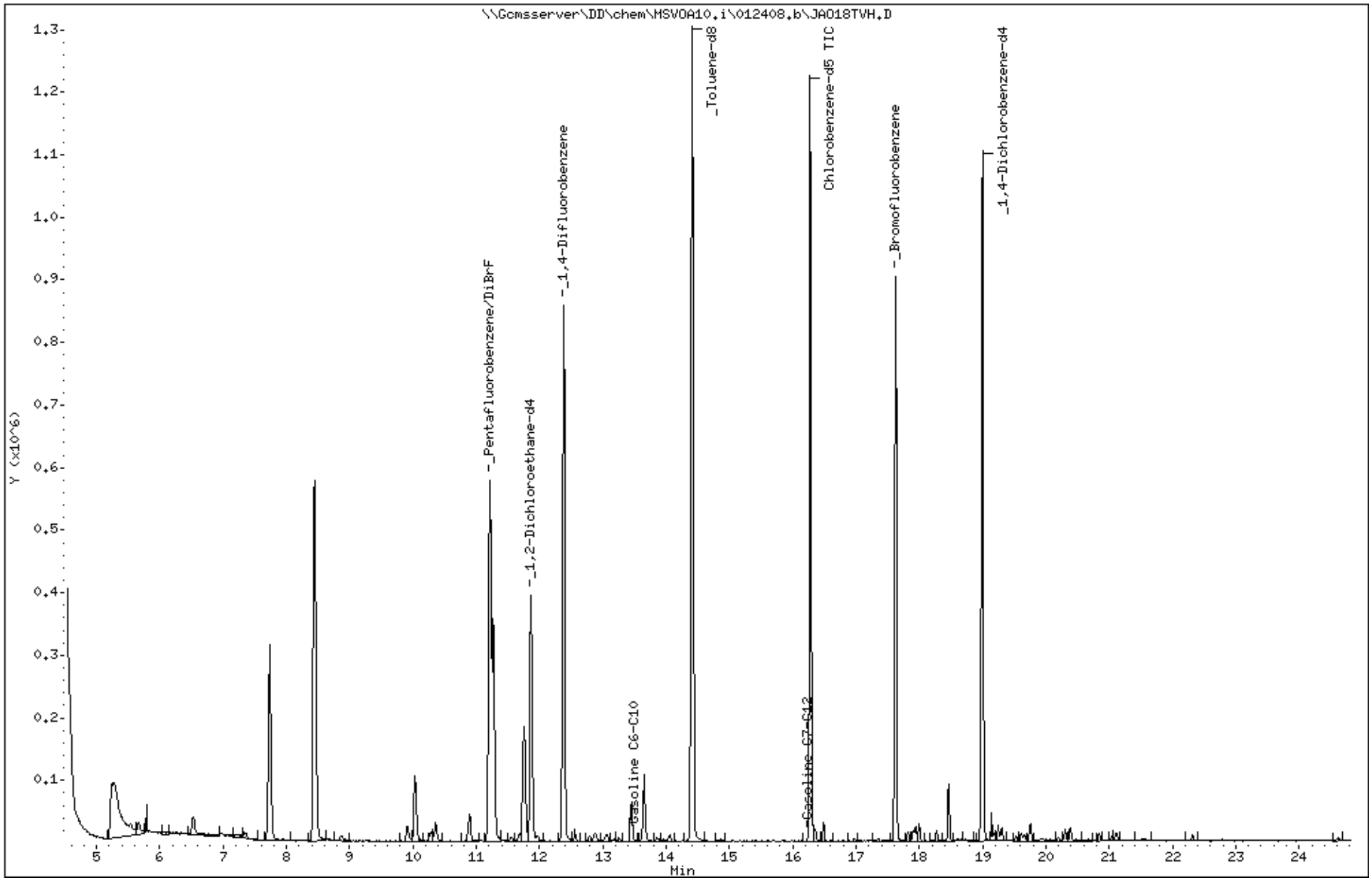


Data File: \\Gcmsserver\DD\chem\MSVOA10.i\012408.b\JA018TVH.D
Date : 24-JAN-2008 17:35
Client ID: DYNA P&T
Sample Info: S,200683-003

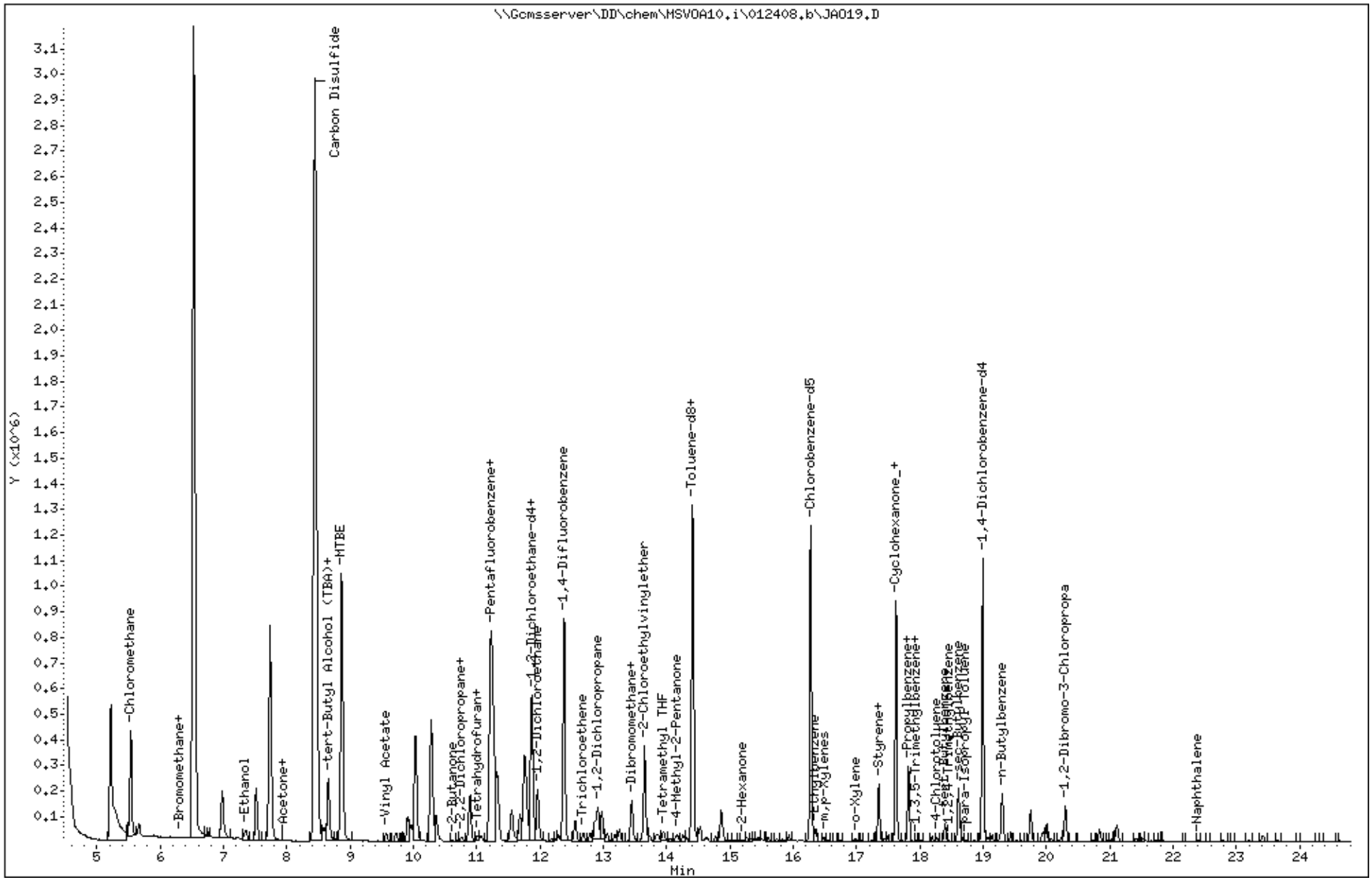
Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00

Column phase:



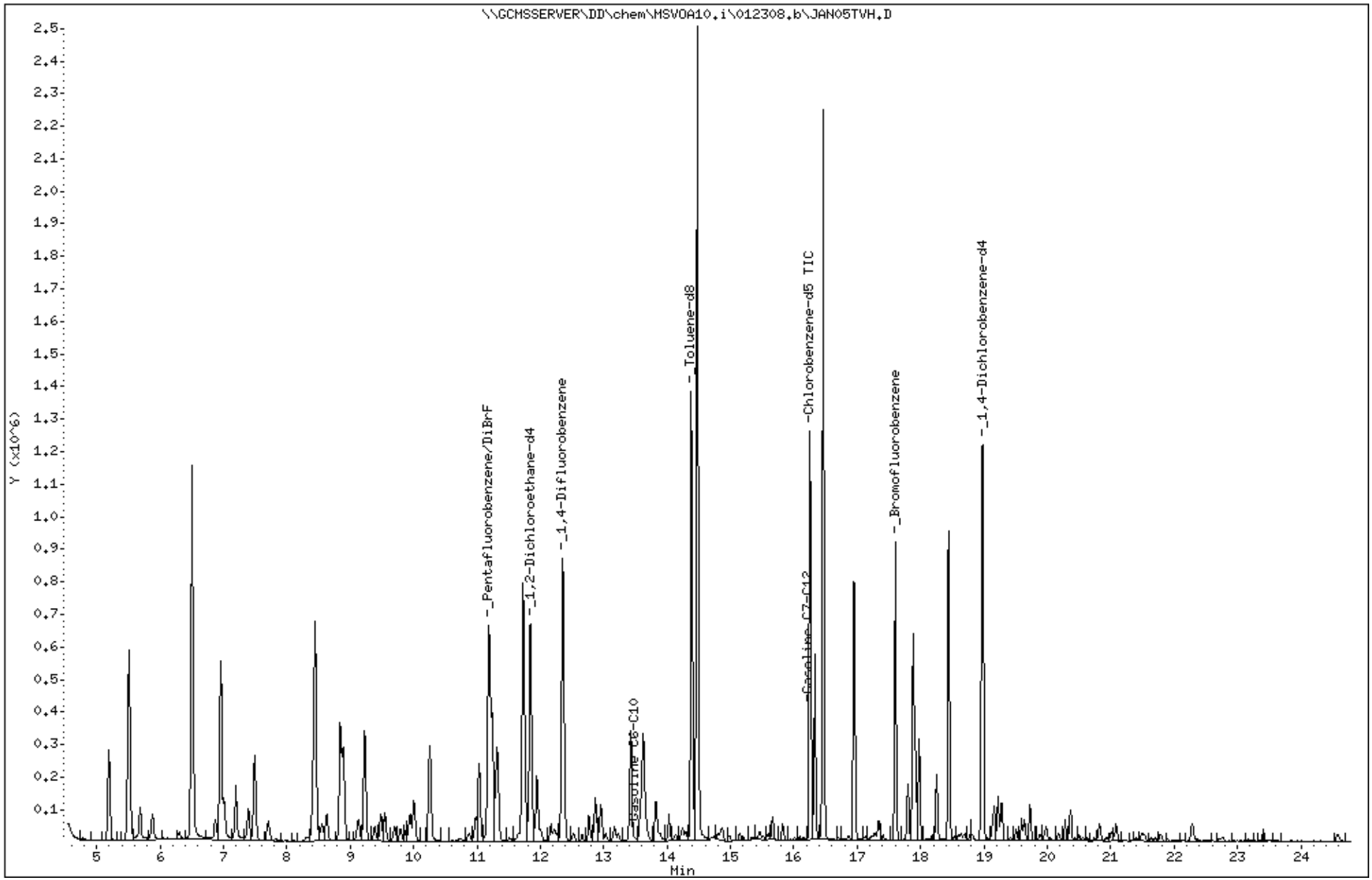
Data File: \\Gcmsserver\DD\chem\MSVOA10.i\012408.b\JA019.D
Date : 24-JAN-2008 18:10
Client ID: DYNA P&T
Instrument: MSVOA10.i
Sample Info: S,200683-004
Purge Volume: 5.0
Operator: VOA
Column phase: RTx Volatiles
Column diameter: 0.32



Data File: \\GCMSSERVER\DD\chem\MSVOA10.i\012308.b\JAN05TVH.D
Date : 23-JAN-2008 10:03
Client ID: DYNA P&T
Sample Info: CCV/BS,QC425134

Instrument: MSVOA10.i
Operator: VOA
Column diameter: 2.00

Column phase:



Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

CHAIN OF CUSTODY

C & T LOGIN #: 200683

Sampler: ENW

Project No.: 001-09480-06
Project Name: Hanson Sump 1
Project P.O.: 001-09480-06
Turnaround Time: Standard

Report To: Katrin Schliewen
Company: LFR, Inc
Telephone: 510-652-4500
Fax: 510-652-2246

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Matrix: Water	Matrix: Waste	# of Containers	Preservative: HCL	Preservative: H_2SO_4	Preservative: HNO_3	Preservative: ICE	Analysis: TPHd (8015M)	Analysis: TPHg/BTEX/MTBE (8260B)
-1	MW-8	1/22/08 935		X		4	X				X	X
-2	MW-7D	1/22/08 1120		X		4	X				X	X
-3	MW-7S	1/22/08 1300		X		4	X				X	X
-4	MW-1	1/22/08 1420		X		4	X				X	X

Notes:

SAMPLE RECEIPT
☑ Intact ☐ Cold
☑ On Ice ☐ Ambient
Preservative Correct?
☐ Yes ☐ No ☐ N/A

RELINQUISHED BY:

SIGNATURE	DATE / TIME
[signature]	1/22/08 1609
	DATE / TIME
	DATE / TIME

RECEIVED BY:

SIGNATURE	DATE / TIME
[signature]	1/22/08 1609
	DATE / TIME
	DATE / TIME

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 200683 Date Received: 01/22/08 Number of Coolers: 1
Client: LFR Project: HANSON SUNOL

A. Preliminary Examination Phase
Date Opened: 01/22/08 By (print): M.VILLANUEVA (sign)

1. Did cooler come with a shipping slip (airbill, etc.)? YES (NO)
If YES, enter carrier name and airbill number:
2. Were custody seals on outside of cooler? YES (NO)
How many and where? Seal date: Seal name: N/A
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO
4. Were custody papers dry and intact when received? (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? (YES) NO
6. Did you sign the custody papers in the appropriate place? (YES) NO
7. Was project identifiable from custody papers? (YES) NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: FOAM BLOCK
9. If required, was sufficient ice used? Samples should be <=6 degrees C. YES NO
Type of ice: WET Temperature: 2.5
10. Were Encore sampling devices present in the cooler? YES (NO)
If YES, enter time they were transferred to the freezer

B. Login Phase
Date Logged In: 01/22/08 By (print): KWellbrock (sign)

1. Did all bottles arrive unbroken? (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? (YES) NO
3. Did bottle labels agree with custody papers? (YES) NO
4. Were appropriate containers used for the tests indicated? (YES) NO
5. Were correct preservatives added to samples? (YES) NO
6. Was sufficient amount of sample sent for tests indicated? (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below (YES) NO
8. Was the client contacted concerning this sample delivery? YES NO
If YES, give details below.
Who was called? By whom? Date:

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 200780
ANALYTICAL REPORT

LFR Levine Fricke	Project : 001-09480-06
1900 Powell Street	Location : Hanson Sunol
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW-9LF	200780-001
MW-9D	200780-002
MW-9S	200780-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 02/01/2008
Project Manager

Signature: _____ Date: 02/04/2008
Operations Manager

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**200780**
Client:	**LFR Levine Fricke**
Project:	**001-09480-06**
Location:	**Hanson Sunol**
Request Date:	**01/25/08**
Samples Received:	**01/25/08**

This hardcopy data package contains sample and QC results for three water samples, requested for the above referenced project on 01/25/08. The samples were received cold and intact. All data were e-mailed to Katrin Schliewen on 01/31/08.

Metals (EPA 6010B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Dissolved Iron

Lab #:	200780	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3010A
Project#:	001-09480-06	Analysis:	EPA 6010B
Analyte:	Iron	Sampled:	01/25/08
Units:	ug/L	Received:	01/25/08
Diln Fac:	1.000	Prepared:	01/28/08
Batch#:	134168	Analyzed:	01/28/08

Field ID	Type	Lab ID	Matrix	Result	RL
MW-9LF	SAMPLE	200780-001	Filtrate	ND	100
MW-9D	SAMPLE	200780-002	Filtrate	2,500	100
MW-9S	SAMPLE	200780-003	Filtrate	130	100
	BLANK	QC425670	Water	ND	100

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	200780	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3010A
Project#:	001-09480-06	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	134168
Field ID:	ZZZZZZZZZZ	Sampled:	01/24/08
MSS Lab ID:	200774-001	Received:	01/25/08
Matrix:	Water	Prepared:	01/28/08
Units:	ug/L	Analyzed:	01/28/08
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC425671		1,000	1,035	103	80-120		
BSD	QC425672		1,000	985.0	99	80-120	5	20
MS	QC425673	321.3	1,000	1,233	91	73-127		
MSD	QC425674		1,000	1,343	102	73-127	8	20

RPD= Relative Percent Difference

200780

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

SAMPLE COLLECTOR:
LFR
1900 Powell Street, 12th Floor
Emeryville, California 94608
(510) 652-4500 Fax: (510) 652-2246

PROJECT NO.:	SECTION NO.:	DATE:	SAMPLER'S INITIALS:	SERIAL NO.:
001-09480-06	***	1/25/07	DCR	Nº 204063

PROJECT NAME: Hanson Sunol

SAMPLER (Signature): Daren C Roth

	SAMPLE ID.	DATE	TIME	Lab Sample No.	No. of Containers	TYPE: Soil	TYPE: Water	TPHd (EPA 8015M)	TPHmo (EPA 8015M)	TPHg (EPA 8015M)	BTEX (EPA 8021/602)	VOCs (EPA 8260/624)	Metals (EPA 6010/7000)	Dissolved Iron	TAT: Standard	TAT: RUSH	TAT: HOLD	REMARKS
-1	MW-9 LF	1/25	1100		1		X							X	X			Please filter and prepare in lab
-2	MW-9 D	1/25	1150		1		X							X	X			
-3	MW-9 S	1/25	1310		1		X							X	X			

*VOCs: ☐ 8260 List ☐ 8240 List ☐ 8010 List ☐ 624 List
**Metals: ☐ CAM17 ☐ RCRA ☐ LUFT

SAMPLE RECEIPT: ☑ Intact ☐ Cold ☑ On Ice ☐ Ambient
Cooler Temp:
Cooler No:
Preservative Correct? ☐ Yes ☐ No ☐ N/A

METHOD OF SHIPMENT: Hand Deliver
LAB REPORT NO.:
FAX COC CONFIRMATION TO: Katrin Schliewen

ANALYTICAL LABORATORY: CET

FAX RESULTS TO: "
SEND HARDCOPY TO: "
SEND EDD TO: EMV.LABEDDS.COM

RELINQUISHED BY: 1	RELINQUISHED BY: 2	RELINQUISHED BY: 3
(SIGNATURE) Daren C Roth (DATE) 1/25/07	(SIGNATURE) (DATE)	(SIGNATURE) (DATE)
(PRINTED NAME) Daren C Roth (TIME) 1705	(PRINTED NAME) (TIME)	(PRINTED NAME) (TIME)
(COMPANY) LFR	(COMPANY)	(COMPANY)
RECEIVED BY: 1	**RECEIVED BY: 2**	**RECEIVED BY (LABORATORY): 3**
(SIGNATURE) (DATE) 1/25	(SIGNATURE) (DATE)	(SIGNATURE) (DATE)
(PRINTED NAME) Sam Evans (TIME) 17:05	(PRINTED NAME) (TIME)	(PRINTED NAME) (TIME)
(COMPANY) CET	(COMPANY)	(COMPANY)

Shipping Copy (White) File Copy (Yellow) Field Copy (Pink)

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 200780 Date Received: 1/25/08 Number of Coolers: 1 KMW 1/25/08
Client: LFR Project: Hanson Sirol

A. Preliminary Examination Phase
Date Opened: 1/25 By (print): KWellbrock (sign) KWellbrock

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bags, bubble wrap, foam block
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
Type of ice: wet Temperature: no temp ø - cold on ice
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 1/25 By (print): KWellbrock (sign) KWellbrock

1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
If YES, give details below.
Who was called? _____ By whom? _____ Date: _____

Additional Comments:

_____
_____
_____
_____
_____
_____

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 200782
ANALYTICAL REPORT

LFR Levine Fricke	Project : 001-09480-06
1900 Powell Street	Location : Hanson Sunol
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
OXY-1S	200782-001
OXY-1D	200782-002
OXY-1LF	200782-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 02/04/2008
Project Manager

Signature: _____ Date: 02/04/2008
Operations Manager

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**200782**
Client:	**LFR Levine Fricke**
Project:	**001-09480-06**
Location:	**Hanson Sunol**
Request Date:	**01/25/08**
Samples Received:	**01/25/08**

This hardcopy data package contains sample and QC results for three water samples, requested for the above referenced project on 01/25/08. The samples were received cold and intact. All data were e-mailed to Katrin Schliewen on 02/01/08.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	01/25/08
Units:	ug/L	Received:	01/25/08
Diln Fac:	1.000	Prepared:	01/27/08
Batch#:	134158		

Field ID: OXY-1S
Type: SAMPLE
Lab ID: 200782-001
Analyzed: 01/29/08

Analyte	Result	RL
Diesel C10-C24	3,800 Y	50

Surrogate	%REC	Limits
Hexacosane	107	61-133

Field ID: OXY-1D
Type: SAMPLE
Lab ID: 200782-002
Analyzed: 01/29/08

Analyte	Result	RL
Diesel C10-C24	1,000 Y	50

Surrogate	%REC	Limits
Hexacosane	111	61-133

Field ID: OXY-1LF
Type: SAMPLE
Lab ID: 200782-003
Analyzed: 01/28/08

Analyte	Result	RL
Diesel C10-C24	160 Y	50

Surrogate	%REC	Limits
Hexacosane	102	61-133

Type: BLANK
Lab ID: QC425638
Analyzed: 01/28/08

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	105	61-133

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	134158
Units:	ug/L	Prepared:	01/27/08
Diln Fac:	1.000	Analyzed:	01/28/08

Type: BS
Lab ID: QC425639
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,138	86	58-128

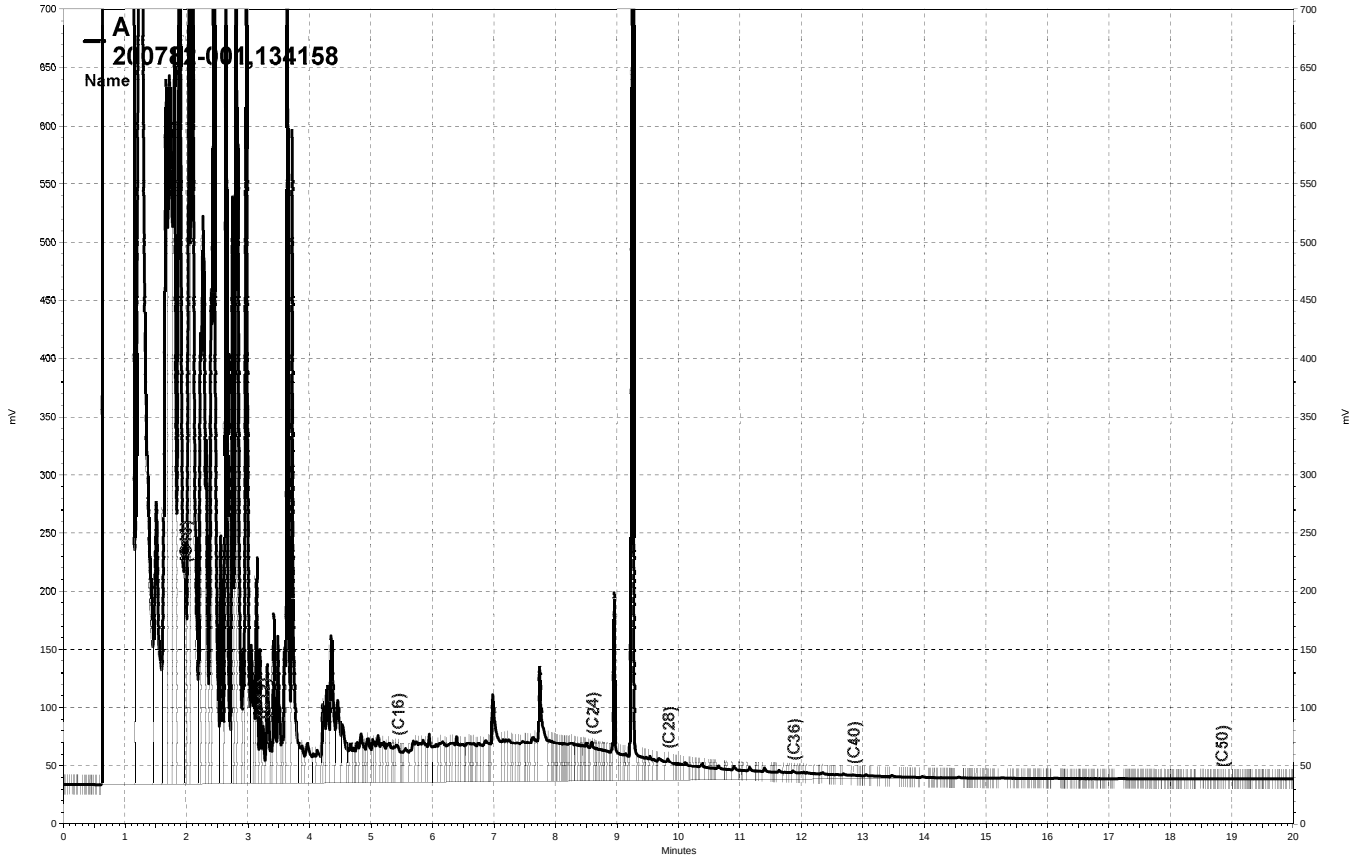
Surrogate	%REC	Limits
Hexacosane	92	61-133

Type: BSD
Lab ID: QC425640
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,310	92	58-128	8	29

Surrogate	%REC	Limits
Hexacosane	98	61-133

RPD= Relative Percent Difference



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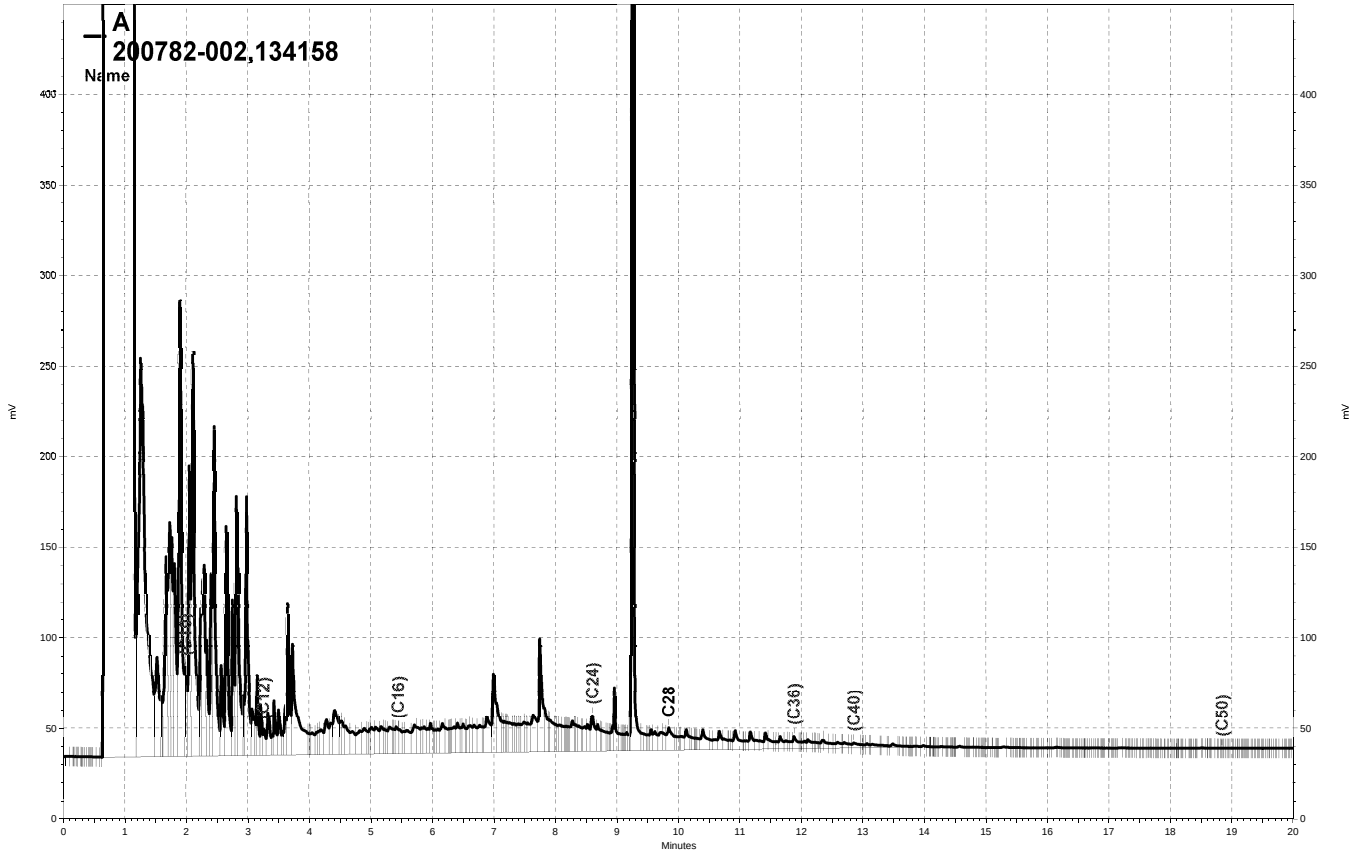

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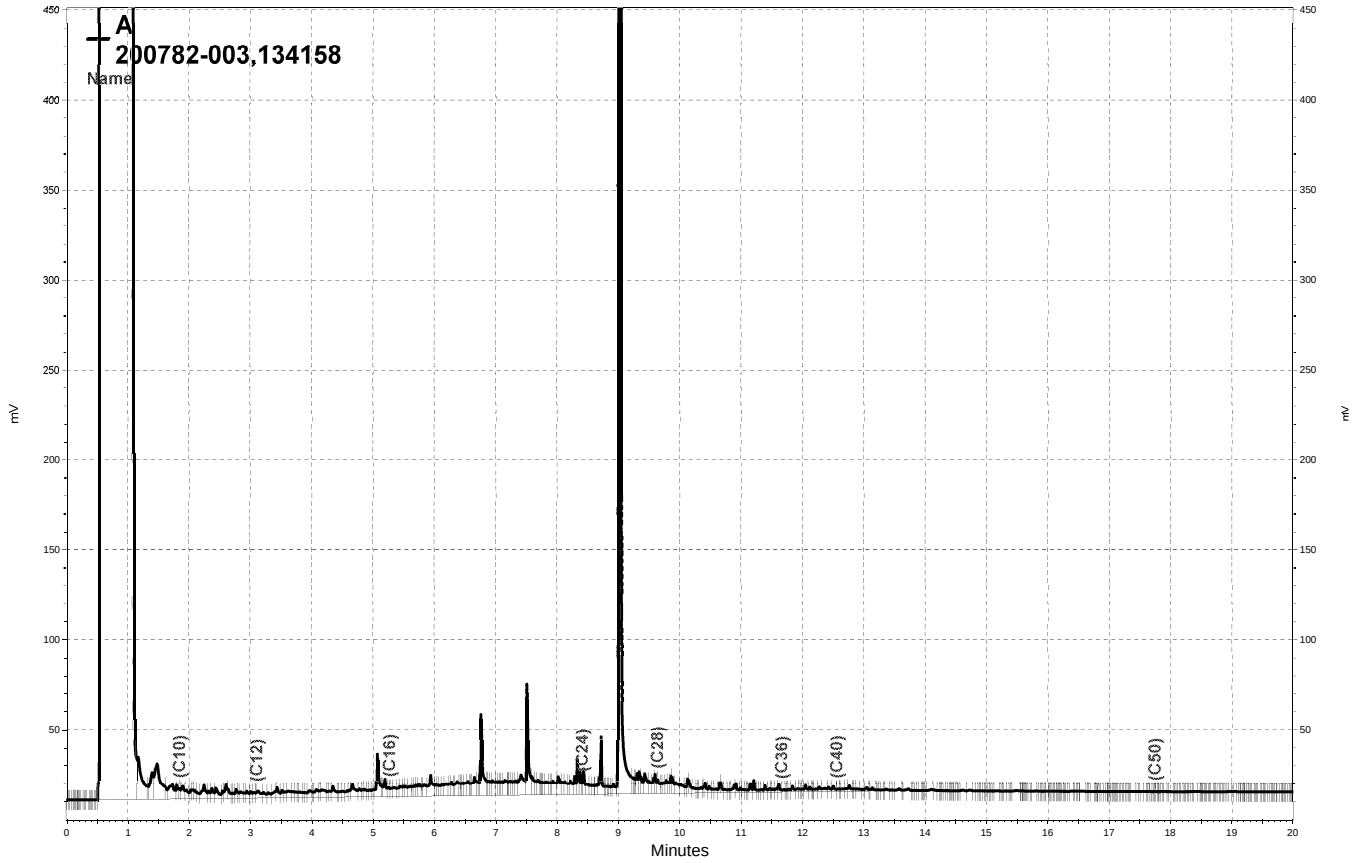

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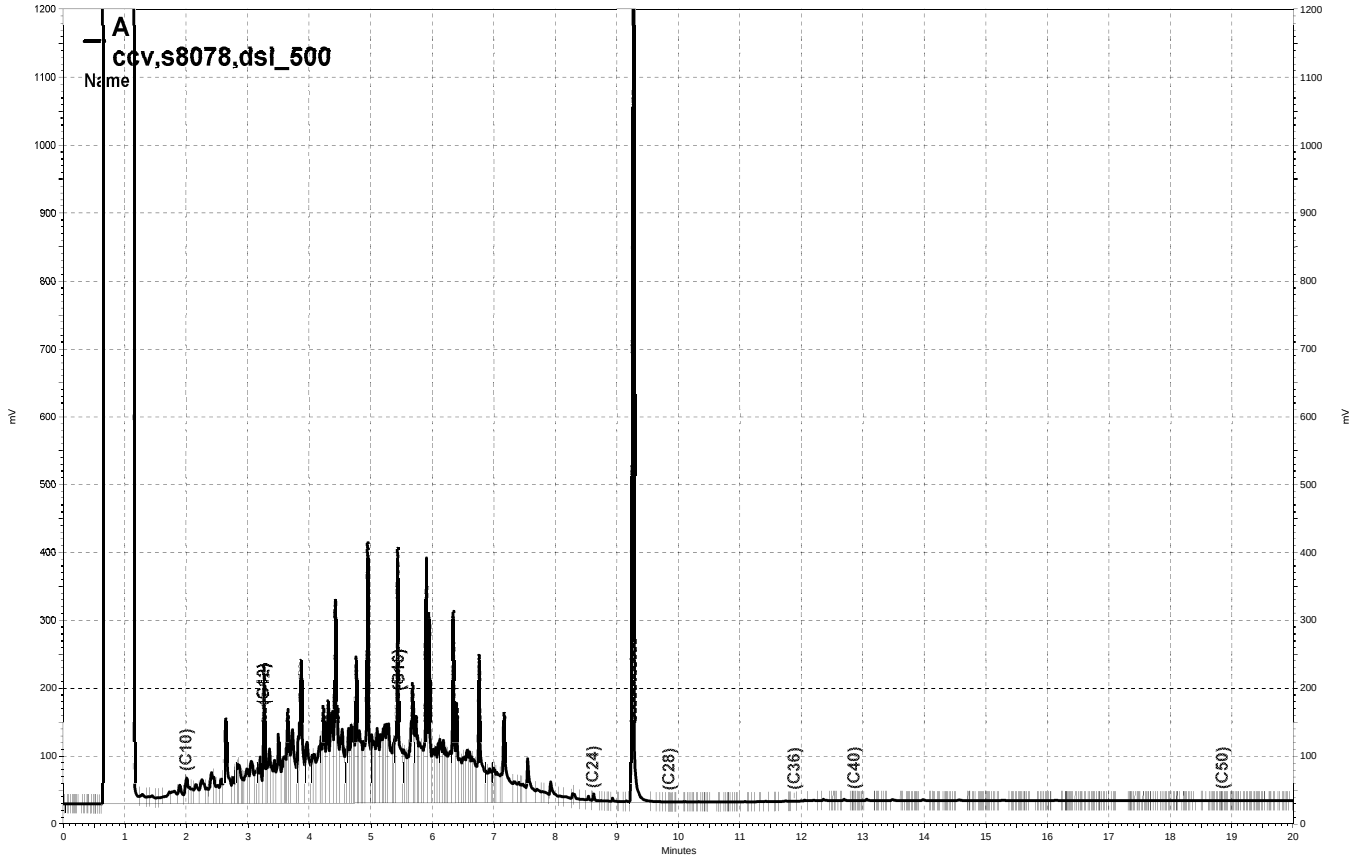

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Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/25/08
Units:	ug/L	Received:	01/25/08

Field ID: OXY-1S
Type: SAMPLE
Lab ID: 200782-001

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	10,000 Y	420	8.333	134313	01/31/08
MTBE	ND	1.0	2.000	134206	01/29/08
Benzene	73	1.0	2.000	134206	01/29/08
Toluene	44	1.0	2.000	134206	01/29/08
Ethylbenzene	650	4.2	8.333	134313	01/31/08
m,p-Xylenes	160	1.0	2.000	134206	01/29/08
o-Xylene	22	1.0	2.000	134206	01/29/08

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	102	80-122	2.000	134206	01/29/08
1,2-Dichloroethane-d4	111	74-137	2.000	134206	01/29/08
Toluene-d8	101	80-120	2.000	134206	01/29/08
Bromofluorobenzene	95	80-120	2.000	134206	01/29/08

Field ID: OXY-1D
Type: SAMPLE
Lab ID: 200782-002
Diln Fac: 1.000
Batch#: 134206
Analyzed: 01/29/08

Analyte	Result	RL
Gasoline C7-C12	2,400 Y	50
MTBE	0.51	0.50
Benzene	23	0.50
Toluene	5.0	0.50
Ethylbenzene	92	0.50
m,p-Xylenes	52	0.50
o-Xylene	5.6	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	100	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/25/08
Units:	ug/L	Received:	01/25/08

Field ID:	OXY-1LF	Diln Fac:	1.000
Type:	SAMPLE	Batch#:	134206
Lab ID:	200782-003	Analyzed:	01/29/08

Analyte	Result	RL
Gasoline C7-C12	60 Y	50
MTBE	ND	0.50
Benzene	0.73	0.50
Toluene	ND	0.50
Ethylbenzene	0.65	0.50
m,p-Xylenes	0.70	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-122
1,2-Dichloroethane-d4	111	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-120

Type:	BLANK	Batch#:	134206
Lab ID:	QC425824	Analyzed:	01/29/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	115	74-137
Toluene-d8	105	80-120
Bromofluorobenzene	100	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	01/25/08
Units:	ug/L	Received:	01/25/08

Type:	BLANK	Batch#:	134313
Lab ID:	QC426213	Analyzed:	01/31/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	113	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	101	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134206
Units:	ug/L	Analyzed:	01/29/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425822

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	22.12	88	60-130
Benzene	25.00	25.50	102	80-120
Toluene	25.00	26.02	104	80-122
Ethylbenzene	25.00	26.07	104	80-127
m,p-Xylenes	50.00	51.68	103	80-130
o-Xylene	25.00	25.67	103	80-126

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-122
1,2-Dichloroethane-d4	106	74-137
Toluene-d8	102	80-120
Bromofluorobenzene	102	80-120

Type: BSD Lab ID: QC425823

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	22.43	90	60-130	1	20
Benzene	25.00	24.45	98	80-120	4	20
Toluene	25.00	24.01	96	80-122	8	20
Ethylbenzene	25.00	25.27	101	80-127	3	20
m,p-Xylenes	50.00	50.70	101	80-130	2	20
o-Xylene	25.00	24.79	99	80-126	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-122
1,2-Dichloroethane-d4	109	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	102	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134206
Units:	ug/L	Analyzed:	01/29/08
Diln Fac:	1.000		

Type: BS Lab ID: QC425836

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,908	95	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	107	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

Type: BSD Lab ID: QC425837

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,677	84	80-120	13	20

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	104	74-137
Toluene-d8	100	80-120
Bromofluorobenzene	101	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134313
Units:	ug/L	Analyzed:	01/31/08
Diln Fac:	1.000		

Type: BS Lab ID: QC426209

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	23.54	94	60-130
Benzene	25.00	26.09	104	80-120
Toluene	25.00	26.22	105	80-122
Ethylbenzene	25.00	26.98	108	80-127
m,p-Xylenes	50.00	54.14	108	80-130
o-Xylene	25.00	26.33	105	80-126

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-122
1,2-Dichloroethane-d4	112	74-137
Toluene-d8	103	80-120
Bromofluorobenzene	101	80-120

Type: BSD Lab ID: QC426210

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	21.75	87	60-130	8	20
Benzene	25.00	24.08	96	80-120	8	20
Toluene	25.00	24.62	98	80-122	6	20
Ethylbenzene	25.00	25.06	100	80-127	7	20
m,p-Xylenes	50.00	49.01	98	80-130	10	20
o-Xylene	25.00	24.24	97	80-126	8	20

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	104	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	200782	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	134313
Units:	ug/L	Analyzed:	01/31/08
Diln Fac:	1.000		

Type: BS Lab ID: QC426211

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,953	98	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC426212

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	1,846	92	80-120	6	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-122
1,2-Dichloroethane-d4	110	74-137
Toluene-d8	101	80-120
Bromofluorobenzene	100	80-120

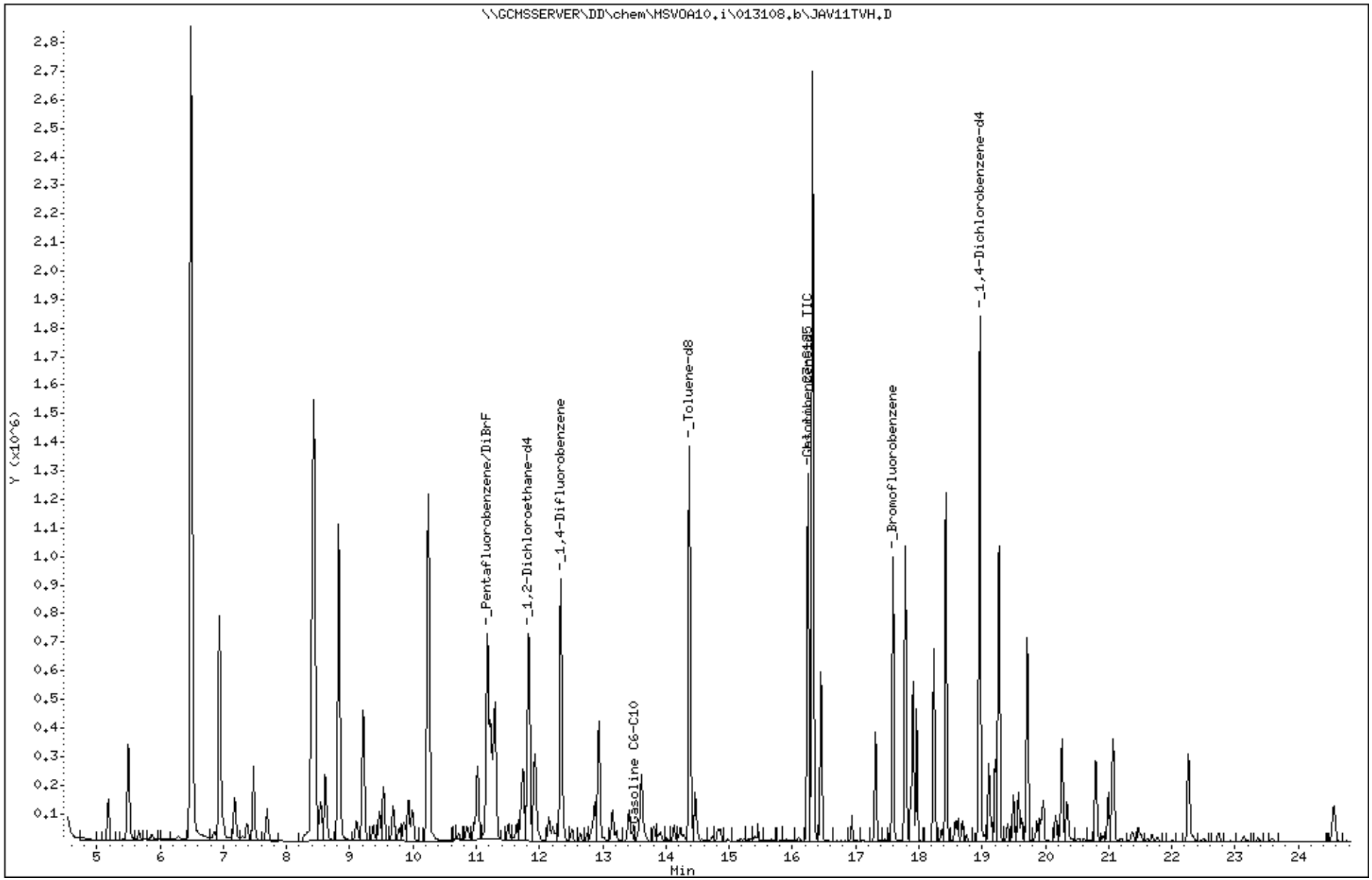
RPD= Relative Percent Difference

Data File: \\GCMSSERVER\DD\chem\MSVOA10.i\013108.b\JAV11TVH.D
Date : 31-JAN-2008 14:12
Client ID: DYNA P&T
Sample Info: S,200782-001

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00

Column phase:



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Date : 29-JAN-2008 13:30
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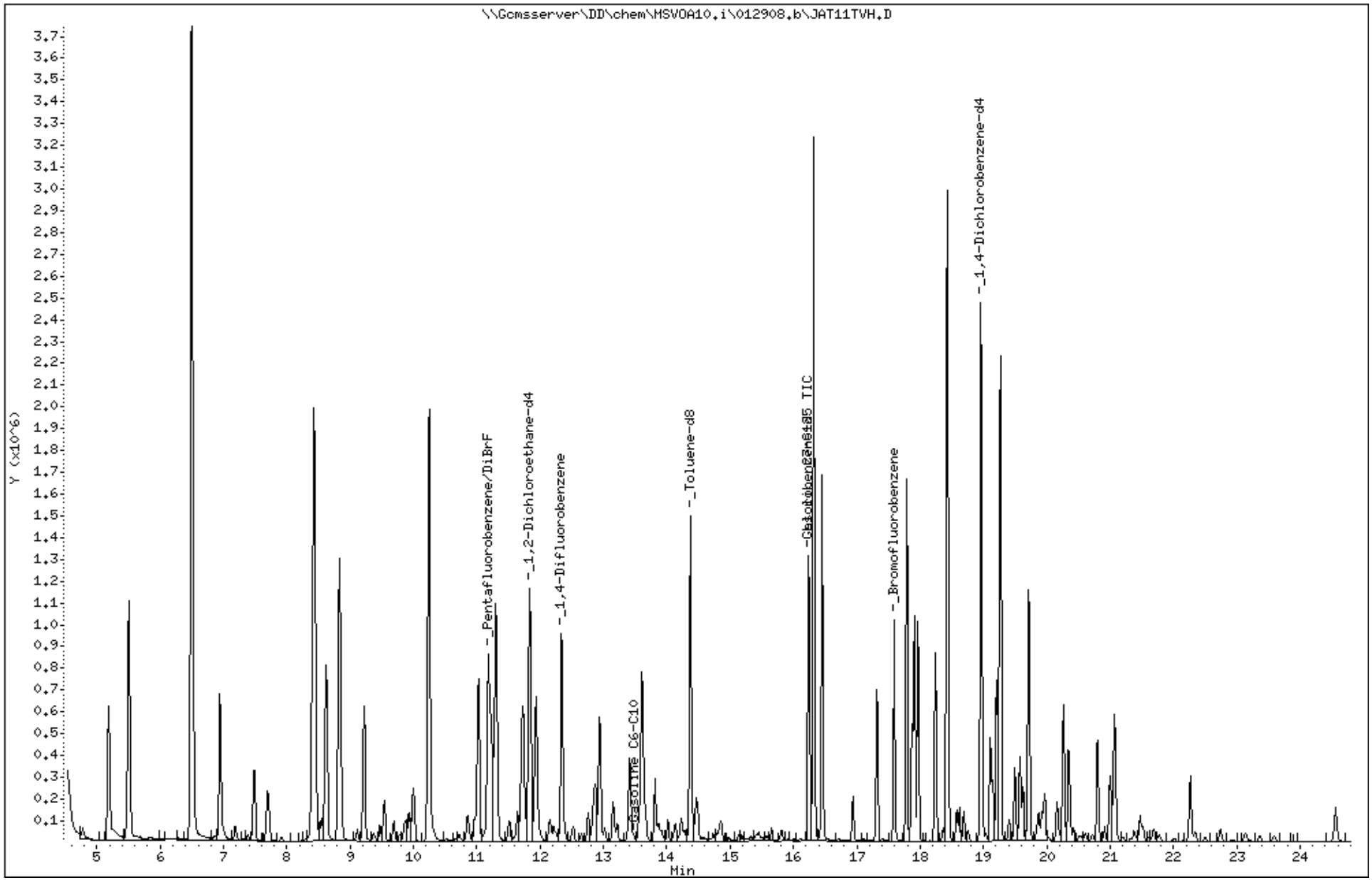
Sample Info: s,200782-002

Column phase:

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00



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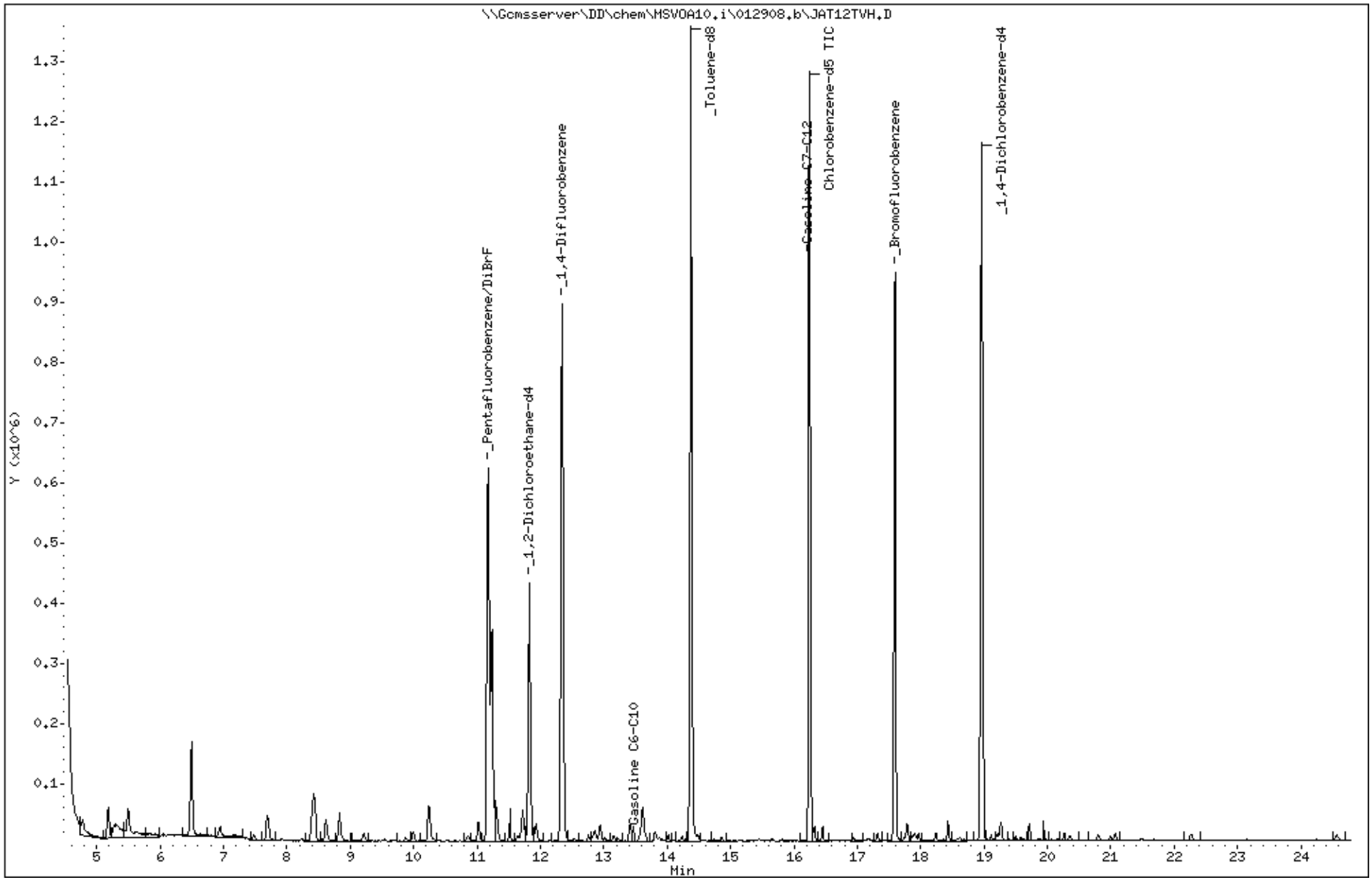
Sample Info: s,200782-003

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00

Column phase:



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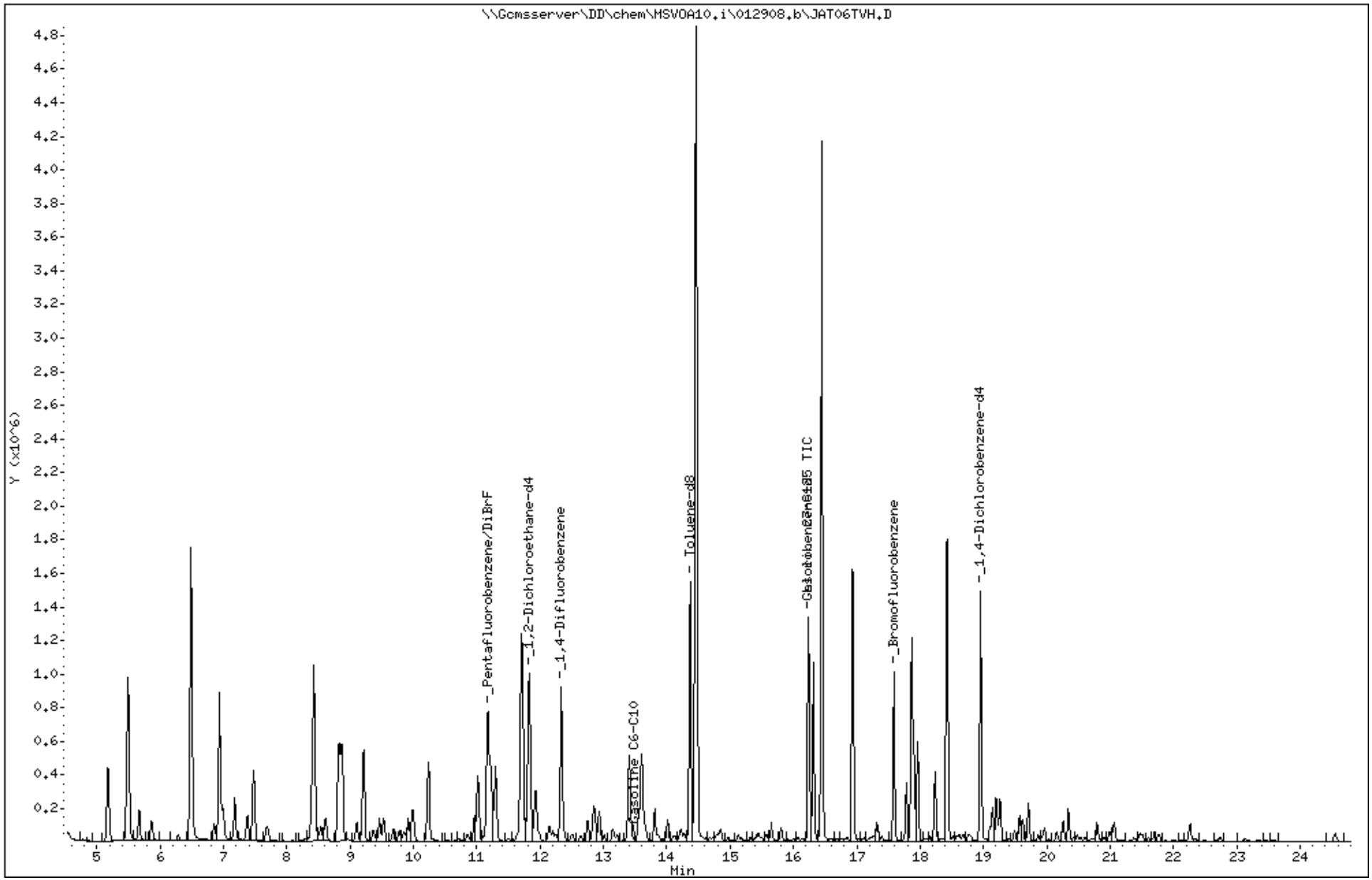
Date : 29-JAN-2008 10:37
Client ID: DYNA P&T
Sample Info: CCV/BS,QC425836

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00

Column phase:



200782

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

SAMPLE COLLECTOR:
LFR 1900 Powell Street, 12th Floor
Emeryville, California 94608
(510) 652-4500 Fax: (510) 652-2246

PROJECT NO.: 001-09480-06
SECTION NO.: ***
DATE: 1/25/08
SAMPLER'S INITIALS: DCR
SERIAL NO.: № 204062
PROJECT NAME: Hanson Sunol
SAMPLER (Signature): Daren c Roth

	SAMPLE ID.	DATE	TIME	Lab Sample No.	No. of Containers	Soil	Water	TPHd (EPA 8015M)	TPHmo (EPA 8015M)	TPHg (EPA 8015M) 8260	BTEX (EPA 8021/602)	VOCs (EPA 8260/624)	Metals (EPA 6010/7000)	~~Fuel Ox~~ NO GASOX per JT			Standard	RUSH:	HOLD	REMARKS
-1	OXY-1S	1/25	1055		4	X		X		X	X			X			X			
-2	OXY-1D	1/25	1330		4	X		X		X	X			X			X			
-3	OXY-1LF	1/25	1450		4	X		X		X	X			X			X			TVH/BTXE ~~GASOX~~ by 8260 per JT JD 1/28/08

REMARKS
*VOCs: [X] 8260 List [ ] 8240 List [ ] 8010 List [ ] 624 List
**Metals: [ ] CAM17 [ ] RCRA [ ] LUFT

SAMPLE RECEIPT: [X] Intact [ ] Cold [X] On Ice [ ] Ambient
Cooler Temp:
Cooler No:
Preservative Correct? [ ] Yes [ ] No [ ] N/A

ANALYTICAL LABORATORY: C & T

METHOD OF SHIPMENT: Hand deliver
LAB REPORT NO.:
FAX COC CONFIRMATION TO: Katrin Schliewen
FAX RESULTS TO: " "
SEND HARDCOPY TO: " "
SEND EDD TO: EMV.LABEDDS.COM

	1	2	3
RELINQUISHED BY:			
(SIGNATURE)	Daren c Roth		
(DATE)	1/25/07		
(PRINTED NAME)	Daren c Roth		
(TIME)	1705		
(COMPANY)	LFR		
RECEIVED BY: / **RECEIVED BY (LABORATORY):**			
(SIGNATURE)	[signature]		
(DATE)	1/25		
(PRINTED NAME)	SAM Evans		
(TIME)	17:05		
(COMPANY)	C+T		

Shipping Copy (White) File Copy (Yellow) Field Copy (Pink)

SOP Volume: Client Services
Section: 4.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd

COOLER RECEIPT CHECKLIST

Login#: 200782 Date Received: 1/25/08 Number of Coolers: 1 KWW 1/25/08
Client: LFR Project: Hanson Sunol

A. Preliminary Examination Phase
Date Opened: 1/25 By (print): KWellbrock (sign) KWellbrock

1. Did cooler come with a slipping slip (airbill, etc.)? YES (NO)
If YES, enter carrier name and airbill number:
2. Were custody seals on outside of cooler? YES (NO)
How many and where? Seal date: Seal name:
3. Were custody seals unbroken and intact at the date and time of arrival? YES NO N/A
4. Were custody papers dry and intact when received? (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? (YES) NO
6. Did you sign the custody papers in the appropriate place? (YES) NO
7. Was project identifiable from custody papers? (YES) NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bags, bubble wrap, foam block
9. If required, was sufficient ice used? Samples should be <=6 degrees C. YES NO
Type of ice: wet Temperature: no temp ø - cold on ice
10. Were Encore sampling devices present in the cooler? YES (NO)
If YES, enter time they were transferred to the freezer

B. Login Phase
Date Logged In: 1/25 By (print): KWellbrock (sign) KWellbrock

1. Did all bottles arrive unbroken? (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? (YES) NO
3. Did bottle labels agree with custody papers? (YES) NO
4. Were appropriate containers used for the tests indicated? (YES) NO
5. Were correct preservatives added to samples? (YES) NO
6. Was sufficient amount of sample sent for tests indicated? (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below. (YES) NO
8. Was the client contacted concerning this sample delivery? YES NO
If YES, give details below.
Who was called? By whom? Date:

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 201289
ANALYTICAL REPORT

LFR Levine Fricke	Project : 001-09480-06
1900 Powell Street	Location : Hanson Sunol
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
MW-1	201289-001
MW-7S	201289-002
MW-8	201289-003
MW-7D	201289-004
MW-9S	201289-005
MW-9LF	201289-006
MW-9D	201289-007
TRIP BLANK	201289-008

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 03/10/2008
Project Manager

Signature: _____ Date: 03/10/2008
Operations Manager

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**201289**
Client:	**LFR Levine Fricke**
Project:	**001-09480-06**
Location:	**Hanson Sunol**
Request Date:	**02/19/08**
Samples Received:	**02/19/08**

This hardcopy data package contains sample and QC results for seven water samples, requested for the above referenced project on 02/19/08. The samples were received cold and intact. All data were e-mailed to Katrin Schliewen on 03/03/08.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Metals (EPA 6010B):
No analytical problems were encountered.

Ion Chromatography (EPA 300.0):
No analytical problems were encountered.

Total Kjeldahl Nitrogen (SM4500NH3-C):
No analytical problems were encountered.

Chemical Oxygen Demand (SM5220D):
No analytical problems were encountered.

Orthophosphate Phosphorous (SM4500P-E):
Samples analyzed past the EPA recommended hold time. High recoveries were observed for orthophosphate (as P) in the MS/MSD of MW-7D (lab # 201289-004); the LCS was within limits, and the associated RPD was within limits. No other analytical problems were encountered.

Total Phosphorous (SM4500P-E):
No analytical problems were encountered.

Biochemical Oxygen Demand (SM5210B):
No analytical problems were encountered.

Ferrous Iron (Fe+2) (SM3500FE-B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Received:	02/19/08
Units:	ug/L	Prepared:	02/23/08
Diln Fac:	1.000	Analyzed:	02/26/08
Batch#:	135172		

Field ID: MW-1 Lab ID: 201289-001
Type: SAMPLE Sampled: 02/18/08

Analyte	Result	RL
Diesel C10-C24	1,000 Y	50

Surrogate	%REC	Limits
Hexacosane	82	63-130

Field ID: MW-7S Lab ID: 201289-002
Type: SAMPLE Sampled: 02/18/08

Analyte	Result	RL
Diesel C10-C24	1,000 Y	50

Surrogate	%REC	Limits
Hexacosane	87	63-130

Field ID: MW-8 Lab ID: 201289-003
Type: SAMPLE Sampled: 02/18/08

Analyte	Result	RL
Diesel C10-C24	450 Y	50

Surrogate	%REC	Limits
Hexacosane	86	63-130

Field ID: MW-7D Lab ID: 201289-004
Type: SAMPLE Sampled: 02/19/08

Analyte	Result	RL
Diesel C10-C24	13,000	50

Surrogate	%REC	Limits
Hexacosane	86	63-130

Field ID: MW-9S Lab ID: 201289-005
Type: SAMPLE Sampled: 02/19/08

Analyte	Result	RL
Diesel C10-C24	9,500 Y	50

Surrogate	%REC	Limits
Hexacosane	80	63-130

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Received:	02/19/08
Units:	ug/L	Prepared:	02/23/08
Diln Fac:	1.000	Analyzed:	02/26/08
Batch#:	135172		

Field ID: MW-9LF
Type: SAMPLE
Lab ID: 201289-006
Sampled: 02/19/08

Analyte	Result	RL
Diesel C10-C24	180 Y	50

Surrogate	%REC	Limits
Hexacosane	79	63-130

Field ID: MW-9D
Type: SAMPLE
Lab ID: 201289-007
Sampled: 02/19/08

Analyte	Result	RL
Diesel C10-C24	15,000	50

Surrogate	%REC	Limits
Hexacosane	77	63-130

Type: BLANK
Lab ID: QC429659

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	80	63-130

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	135172
Units:	ug/L	Prepared:	02/23/08
Diln Fac:	1.000	Analyzed:	02/26/08

Type: BS
Lab ID: QC429660
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	2,074	83	61-120

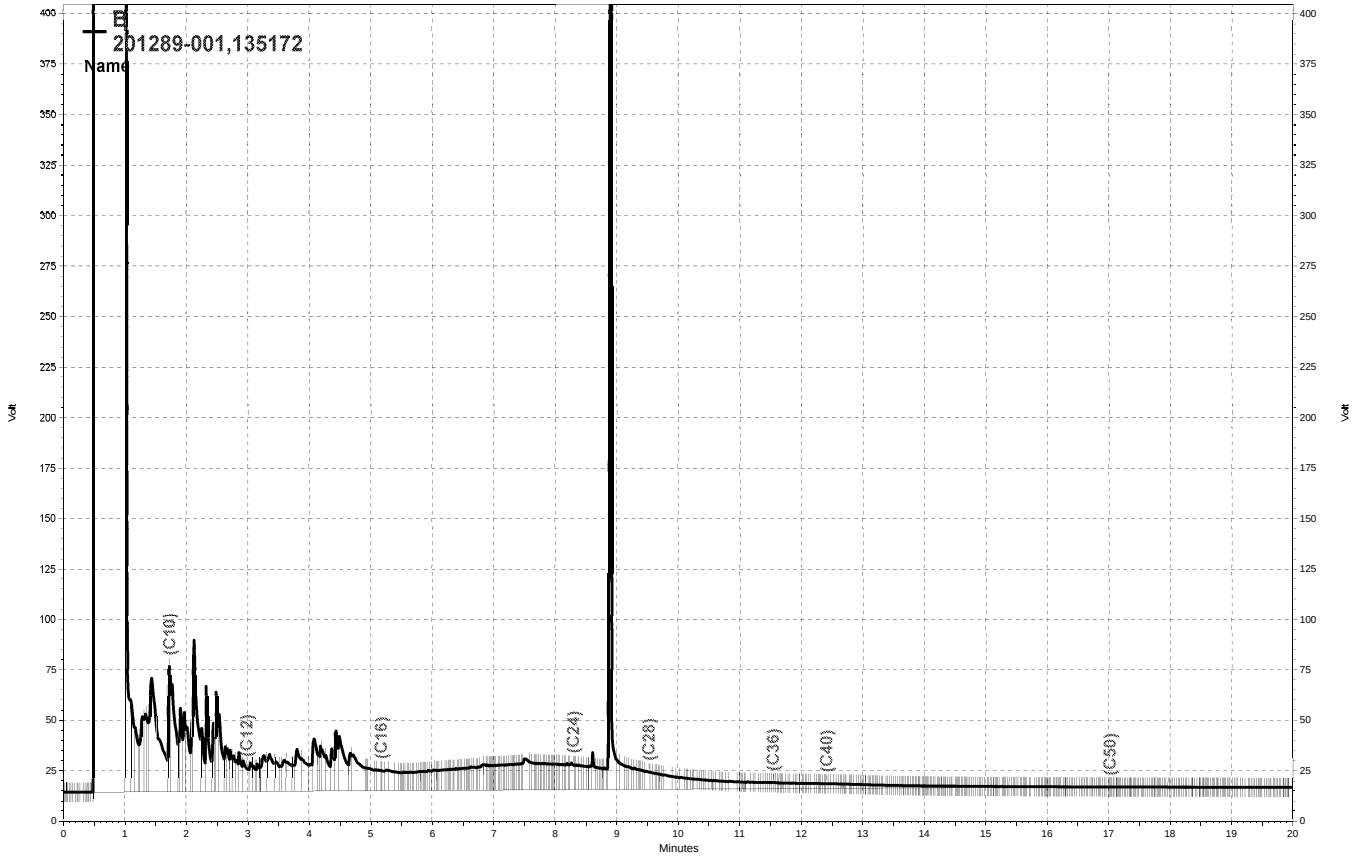
Surrogate	%REC	Limits
Hexacosane	81	63-130

Type: BSD
Lab ID: QC429661
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	2,056	82	61-120	1	29

Surrogate	%REC	Limits
Hexacosane	82	63-130

RPD= Relative Percent Difference



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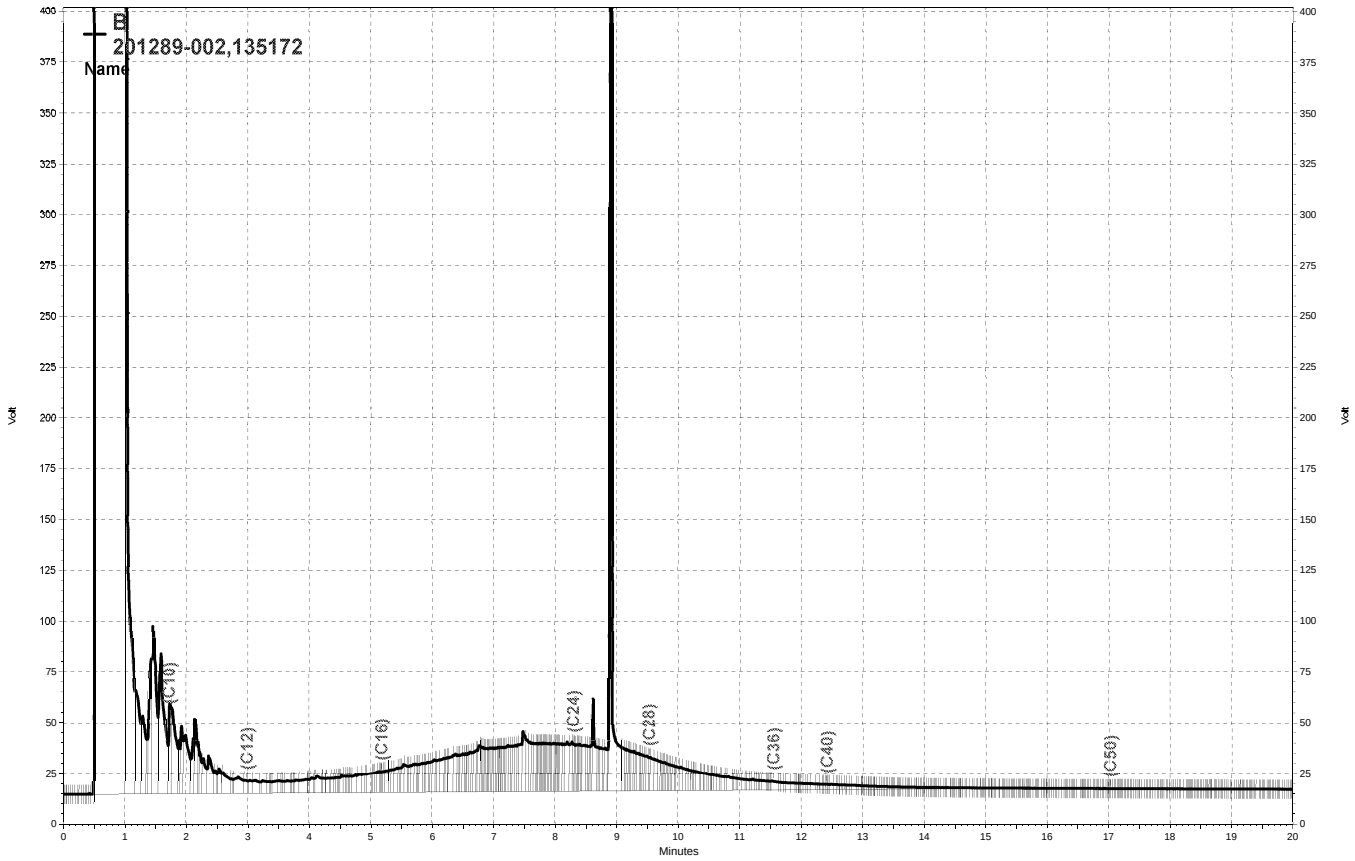

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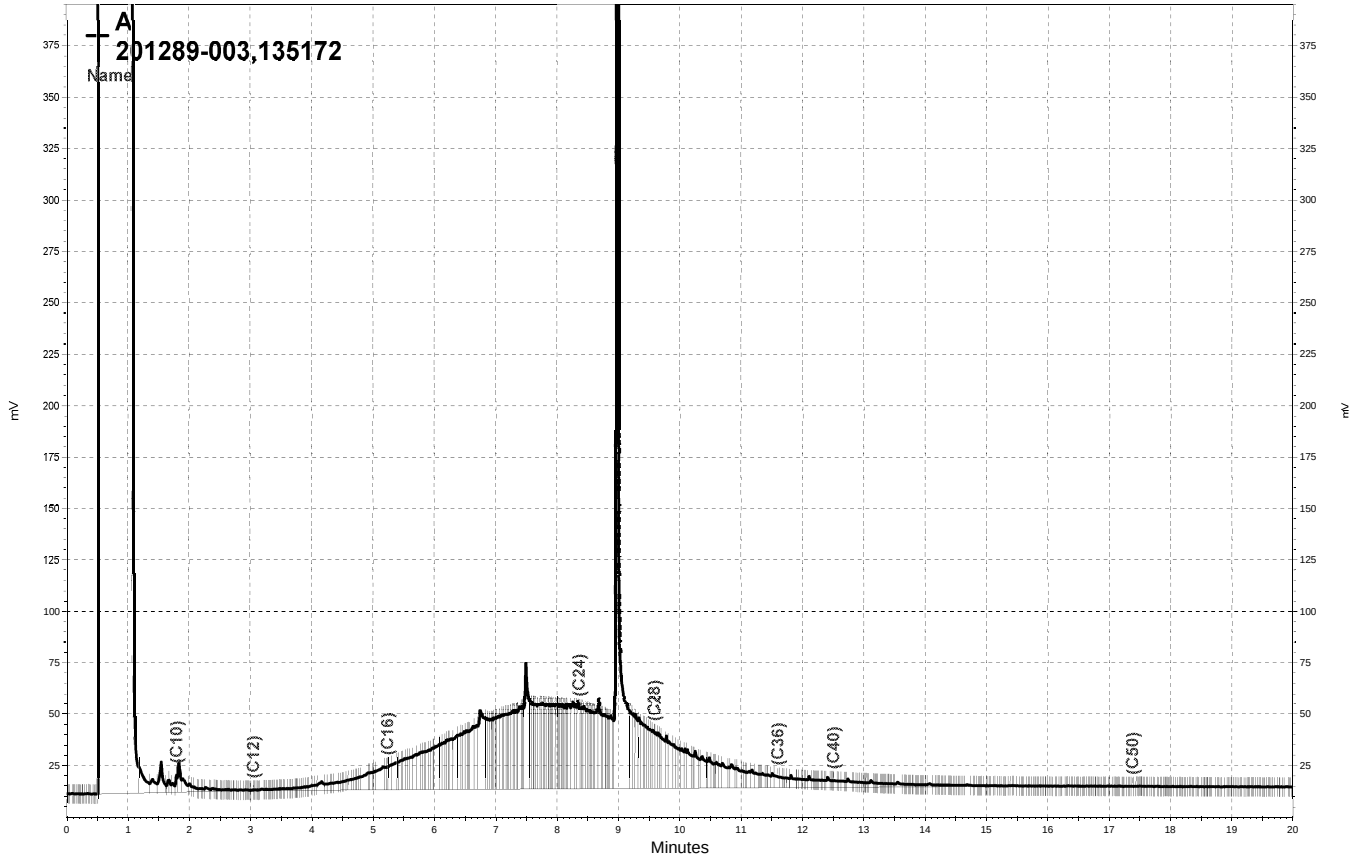

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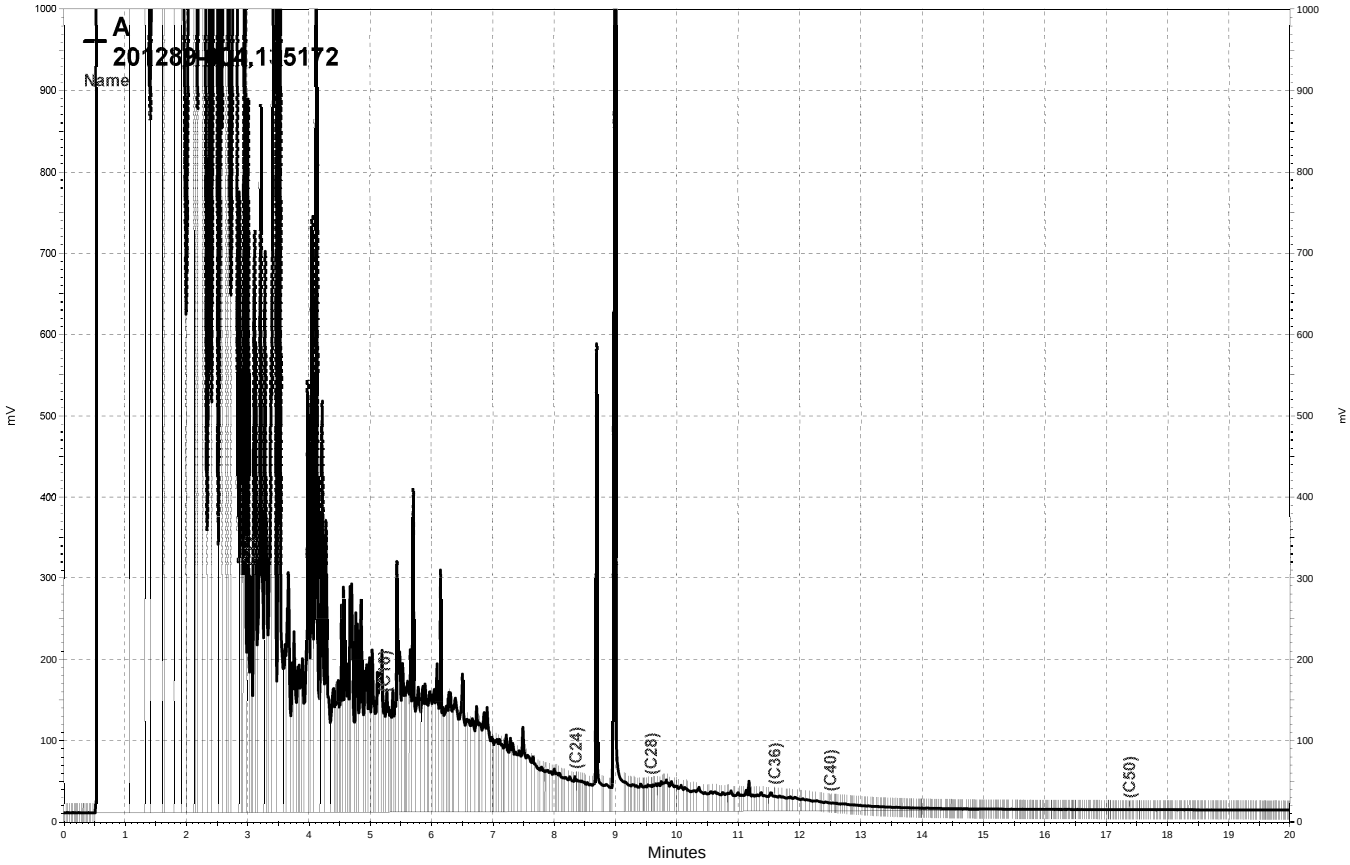

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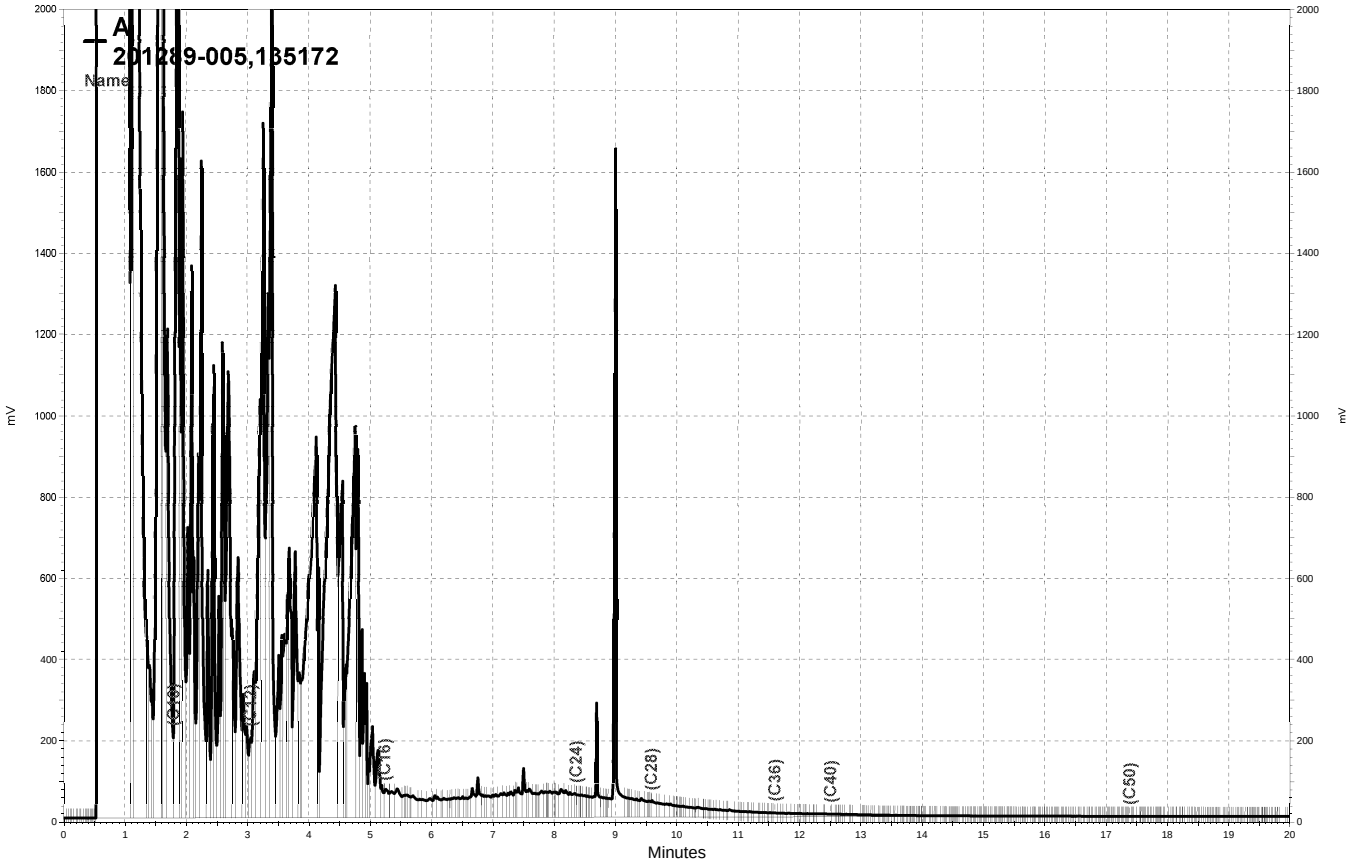

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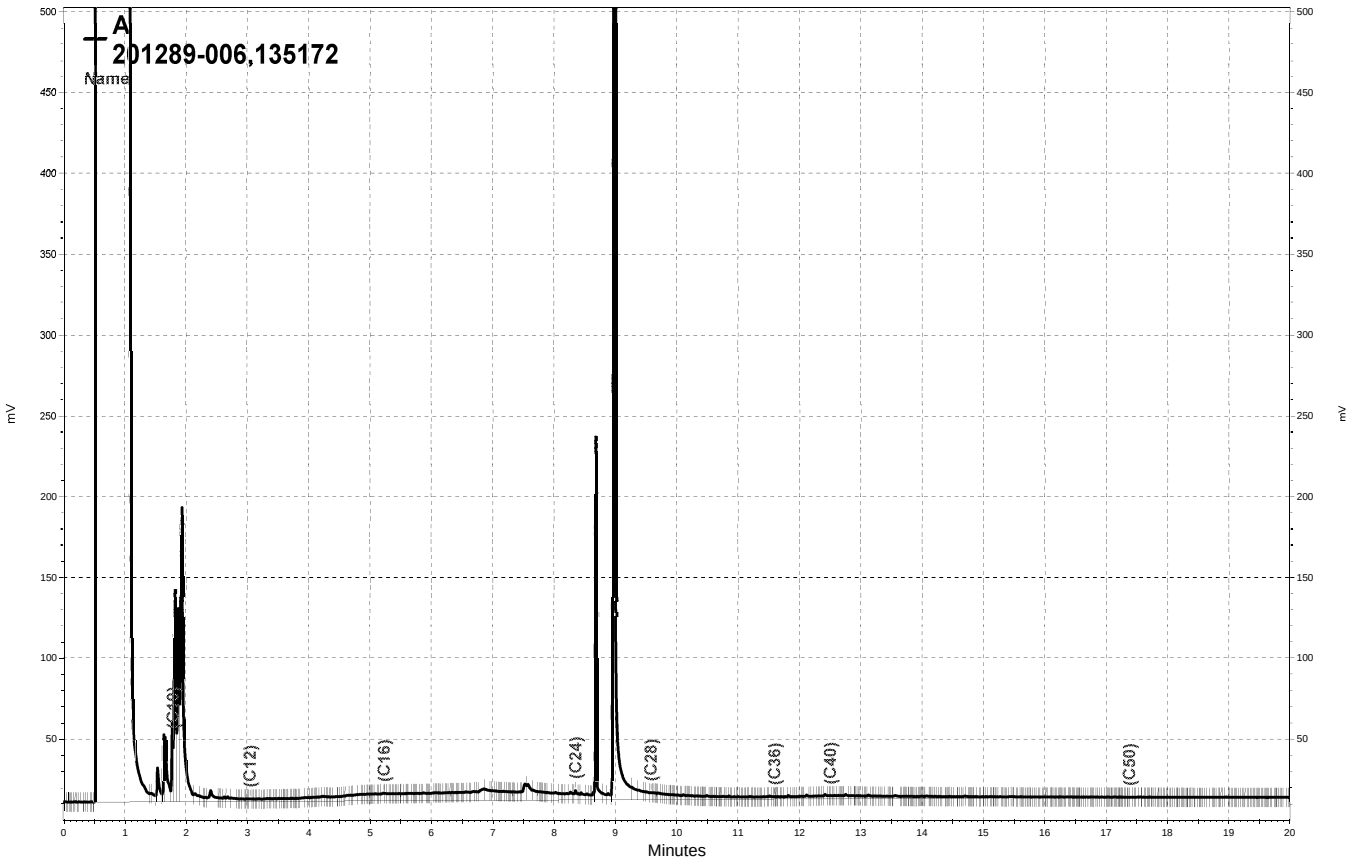

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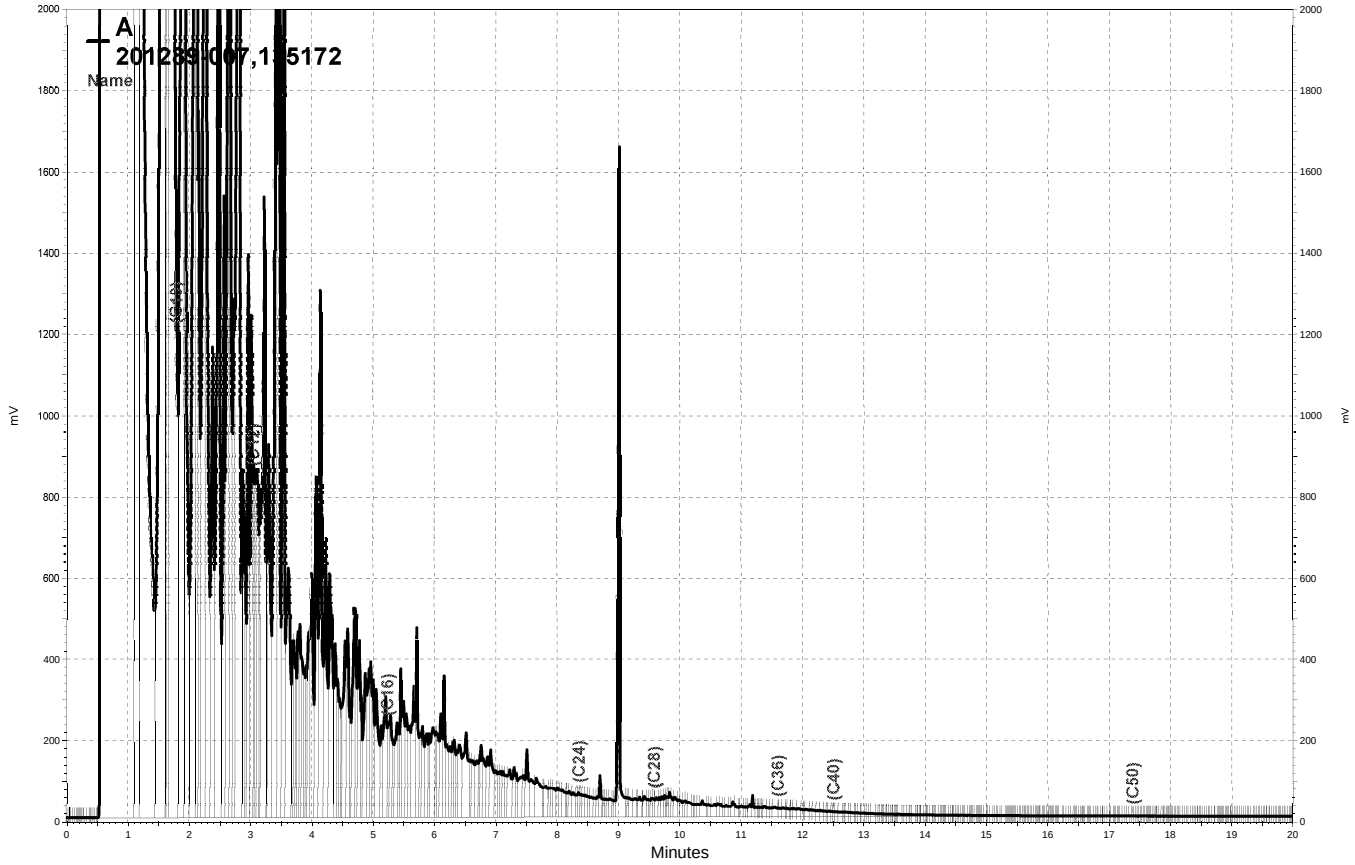

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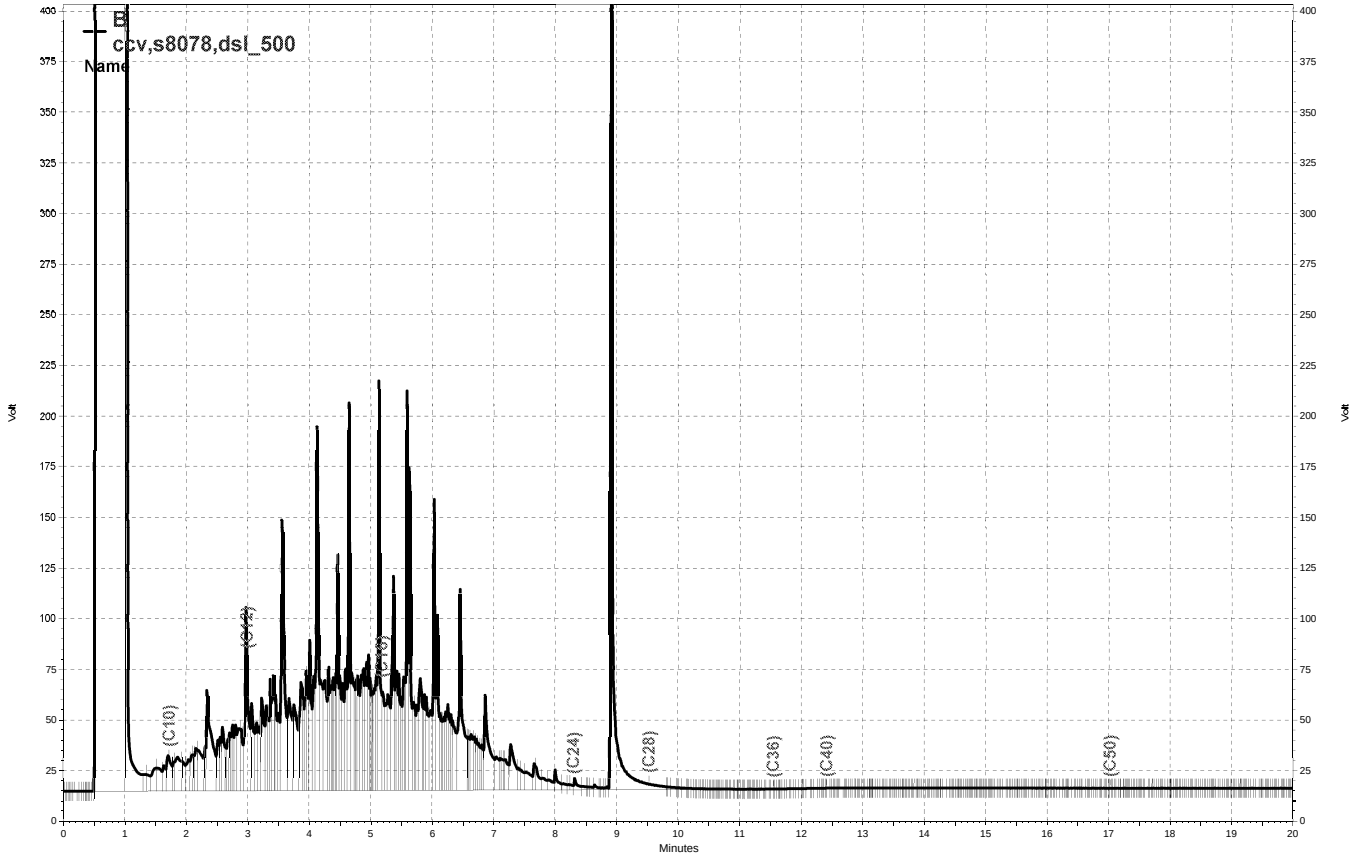

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Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Received:	02/19/08
Units:	ug/L		

Field ID:	MW-1	Batch#:	135120
Type:	SAMPLE	Sampled:	02/18/08
Lab ID:	201289-001	Analyzed:	02/22/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	2,000 Y	50
MTBE	ND	0.50
Benzene	6.3	0.50
Toluene	1.2	0.50
Ethylbenzene	43	0.50
m,p-Xylenes	33	0.50
o-Xylene	4.2	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-123
1,2-Dichloroethane-d4	129	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	98	80-120

Field ID:	MW-7S	Batch#:	135120
Type:	SAMPLE	Sampled:	02/18/08
Lab ID:	201289-002	Analyzed:	02/22/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	2,800 Y	50
MTBE	ND	0.50
Benzene	15	0.50
Toluene	68	0.50
Ethylbenzene	74	0.50
m,p-Xylenes	140	0.50
o-Xylene	12	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-123
1,2-Dichloroethane-d4	125	76-138
Toluene-d8	103	80-120
Bromofluorobenzene	100	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Received:	02/19/08
Units:	ug/L		

Field ID:	MW-8	Batch#:	135120
Type:	SAMPLE	Sampled:	02/18/08
Lab ID:	201289-003	Analyzed:	02/22/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	129	76-138
Toluene-d8	100	80-120
Bromofluorobenzene	107	80-120

Field ID:	MW-7D	Lab ID:	201289-004
Type:	SAMPLE	Sampled:	02/19/08

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	56,000	1,700	33.33	135311	02/27/08
MTBE	ND	3.6	7.143	135209	02/25/08
Benzene	140	3.6	7.143	135209	02/25/08
Toluene	520	3.6	7.143	135209	02/25/08
Ethylbenzene	2,500	17	33.33	135311	02/27/08
m,p-Xylenes	3,100	17	33.33	135311	02/27/08
o-Xylene	370	3.6	7.143	135209	02/25/08

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	102	80-123	33.33	135311	02/27/08
1,2-Dichloroethane-d4	100	76-138	33.33	135311	02/27/08
Toluene-d8	98	80-120	33.33	135311	02/27/08
Bromofluorobenzene	82	80-120	33.33	135311	02/27/08

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Received:	02/19/08
Units:	ug/L		

Field ID: MW-9S
Type: SAMPLE
Lab ID: 201289-005
Sampled: 02/19/08

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	25,000 Y	1,700	33.33	135311	02/27/08
MTBE	ND	6.3	12.50	135209	02/25/08
Benzene	9.8	6.3	12.50	135209	02/25/08
Toluene	75	6.3	12.50	135209	02/25/08
Ethylbenzene	18	17	33.33	135311	02/27/08
m,p-Xylenes	2,100	17	33.33	135311	02/27/08
o-Xylene	1,900	17	33.33	135311	02/27/08

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	99	80-123	33.33	135311	02/27/08
1,2-Dichloroethane-d4	101	76-138	33.33	135311	02/27/08
Toluene-d8	98	80-120	33.33	135311	02/27/08
Bromofluorobenzene	96	80-120	33.33	135311	02/27/08

Field ID: MW-9LF
Type: SAMPLE
Lab ID: 201289-006
Diln Fac: 1.000
Batch#: 135209
Sampled: 02/19/08
Analyzed: 02/25/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-123
1,2-Dichloroethane-d4	103	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	99	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Received:	02/19/08
Units:	ug/L		

Field ID:	MW-9D	Lab ID:	201289-007
Type:	SAMPLE	Sampled:	02/19/08

Analyte	Result	RL	Diln Fac	Batch#	Analyzed
Gasoline C7-C12	34,000	710	14.29	135120	02/22/08
MTBE	ND	7.1	14.29	135120	02/22/08
Benzene	290	7.1	14.29	135120	02/22/08
Toluene	1,300	7.1	14.29	135120	02/22/08
Ethylbenzene	840	7.1	14.29	135120	02/22/08
m,p-Xylenes	3,200	8.3	16.67	135358	02/28/08
o-Xylene	1,000	7.1	14.29	135120	02/22/08

Surrogate	%REC	Limits	Diln Fac	Batch#	Analyzed
Dibromofluoromethane	101	80-123	14.29	135120	02/22/08
1,2-Dichloroethane-d4	124	76-138	14.29	135120	02/22/08
Toluene-d8	101	80-120	14.29	135120	02/22/08
Bromofluorobenzene	95	80-120	14.29	135120	02/22/08

Type:	BLANK	Batch#:	135120
Lab ID:	QC429456	Analyzed:	02/22/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-123
1,2-Dichloroethane-d4	133	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	106	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Received:	02/19/08
Units:	ug/L		

Type: BLANK
Lab ID: QC429824
Diln Fac: 1.000

Batch#: 135209
Analyzed: 02/25/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	107	80-123
1,2-Dichloroethane-d4	88	76-138
Toluene-d8	87	80-120
Bromofluorobenzene	94	80-120

Type: BLANK
Lab ID: QC430243
Diln Fac: 1.000

Batch#: 135311
Analyzed: 02/27/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	104	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	100	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Received:	02/19/08
Units:	ug/L		

Type:	BLANK	Batch#:	135358
Lab ID:	QC430428	Analyzed:	02/28/08
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	104	76-138
Toluene-d8	99	80-120
Bromofluorobenzene	98	80-120

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135120
Units:	ug/L	Analyzed:	02/22/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429452

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	23.43	94	60-136
Benzene	25.00	26.40	106	80-120
Toluene	25.00	26.88	108	80-121
Ethylbenzene	25.00	27.03	108	80-124
m,p-Xylenes	50.00	52.07	104	80-128
o-Xylene	25.00	25.28	101	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	104	80-123
1,2-Dichloroethane-d4	134	76-138
Toluene-d8	101	80-120
Bromofluorobenzene	107	80-120

Type: BSD Lab ID: QC429453

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	22.11	88	60-136	6	20
Benzene	25.00	25.22	101	80-120	5	20
Toluene	25.00	24.34	97	80-121	10	20
Ethylbenzene	25.00	25.96	104	80-124	4	20
m,p-Xylenes	50.00	48.92	98	80-128	6	20
o-Xylene	25.00	23.73	95	80-123	6	20

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-123
1,2-Dichloroethane-d4	133	76-138
Toluene-d8	103	80-120
Bromofluorobenzene	103	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135120
Units:	ug/L	Analyzed:	02/22/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429454

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,024	102	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	105	80-123
1,2-Dichloroethane-d4	135	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	103	80-120

Type: BSD Lab ID: QC429455

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	1,058	106	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	102	80-123
1,2-Dichloroethane-d4	128	76-138
Toluene-d8	102	80-120
Bromofluorobenzene	106	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135209
Units:	ug/L	Analyzed:	02/25/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429820

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	22.10	88	60-136
Benzene	25.00	23.54	94	80-120
Toluene	25.00	23.39	94	80-121
Ethylbenzene	25.00	25.46	102	80-124
m,p-Xylenes	50.00	48.90	98	80-128
o-Xylene	25.00	24.53	98	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	94	80-123
1,2-Dichloroethane-d4	86	76-138
Toluene-d8	95	80-120
Bromofluorobenzene	94	80-120

Type: BSD Lab ID: QC429821

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	22.02	88	60-136	0	20
Benzene	25.00	23.28	93	80-120	1	20
Toluene	25.00	22.99	92	80-121	2	20
Ethylbenzene	25.00	25.30	101	80-124	1	20
m,p-Xylenes	50.00	47.41	95	80-128	3	20
o-Xylene	25.00	23.62	94	80-123	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-123
1,2-Dichloroethane-d4	87	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	90	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135209
Units:	ug/L	Analyzed:	02/25/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429822

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	985.7	99	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	92	80-123
1,2-Dichloroethane-d4	80	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC429823

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	966.2	97	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	95	80-123
1,2-Dichloroethane-d4	85	76-138
Toluene-d8	95	80-120
Bromofluorobenzene	91	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135311
Units:	ug/L	Analyzed:	02/27/08
Diln Fac:	1.000		

Type: BS Lab ID: QC430241

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,075	108	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	98	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC430242

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	1,031	103	80-120	4	20

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	99	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC430347	Batch#:	135311
Matrix:	Water	Analyzed:	02/27/08
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	24.79	99	60-136
Benzene	25.00	25.00	100	80-120
Toluene	25.00	25.16	101	80-121
Ethylbenzene	25.00	28.25	113	80-124
m,p-Xylenes	50.00	52.15	104	80-128
o-Xylene	25.00	25.69	103	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	96	80-123
1,2-Dichloroethane-d4	95	76-138
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Field ID:	ZZZZZZZZZZ	Batch#:	135311
MSS Lab ID:	201421-004	Sampled:	02/21/08
Matrix:	Water	Received:	02/23/08
Units:	ug/L	Analyzed:	02/28/08
Diln Fac:	1.000		

Type: MS Lab ID: QC430375

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.1000	25.00	23.78	95	72-129
Benzene	<0.2500	25.00	23.87	95	80-122
Toluene	<0.1338	25.00	23.58	94	80-120
Ethylbenzene	<0.1383	25.00	26.55	106	80-123
m,p-Xylenes	<0.2963	50.00	48.76	98	80-126
o-Xylene	<0.1621	25.00	24.58	98	80-122

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-123
1,2-Dichloroethane-d4	92	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	91	80-120

Type: MSD Lab ID: QC430376

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	23.68	95	72-129	0	20
Benzene	25.00	24.25	97	80-122	2	20
Toluene	25.00	23.61	94	80-120	0	20
Ethylbenzene	25.00	26.81	107	80-123	1	20
m,p-Xylenes	50.00	50.00	100	80-126	3	20
o-Xylene	25.00	24.48	98	80-122	0	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	94	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	83	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135358
Units:	ug/L	Analyzed:	02/28/08
Diln Fac:	1.000		

Type: BS Lab ID: QC430424

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	23.51	94	60-136
Benzene	25.00	23.70	95	80-120
Toluene	25.00	23.86	95	80-121
Ethylbenzene	25.00	26.73	107	80-124
m,p-Xylenes	50.00	49.59	99	80-128
o-Xylene	25.00	24.65	99	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	97	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC430425

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	23.82	95	60-136	1	20
Benzene	25.00	23.44	94	80-120	1	20
Toluene	25.00	23.16	93	80-121	3	20
Ethylbenzene	25.00	26.39	106	80-124	1	20
m,p-Xylenes	50.00	49.70	99	80-128	0	20
o-Xylene	25.00	23.95	96	80-123	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	95	76-138
Toluene-d8	89	80-120
Bromofluorobenzene	96	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135358
Units:	ug/L	Analyzed:	02/28/08
Diln Fac:	1.000		

Type: BS Lab ID: QC430426

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,056	106	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	94	76-138
Toluene-d8	94	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC430427

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	1,022	102	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	99	80-123
1,2-Dichloroethane-d4	96	76-138
Toluene-d8	96	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference

Data File: \\GCMSSERVER\DD\chem\MSVOA10.i\022208.b\JBM08TVH.D
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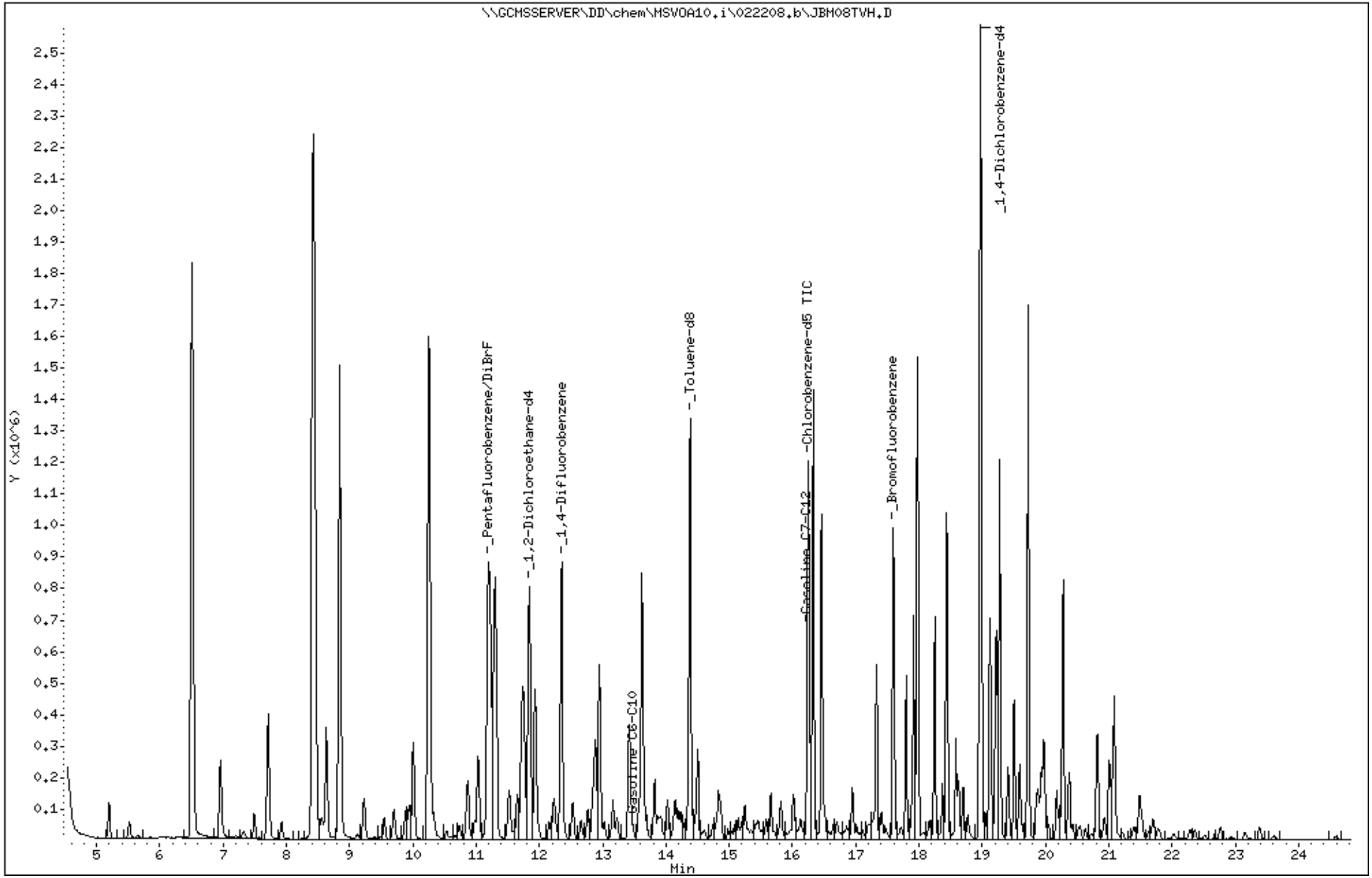

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Operator: VOA
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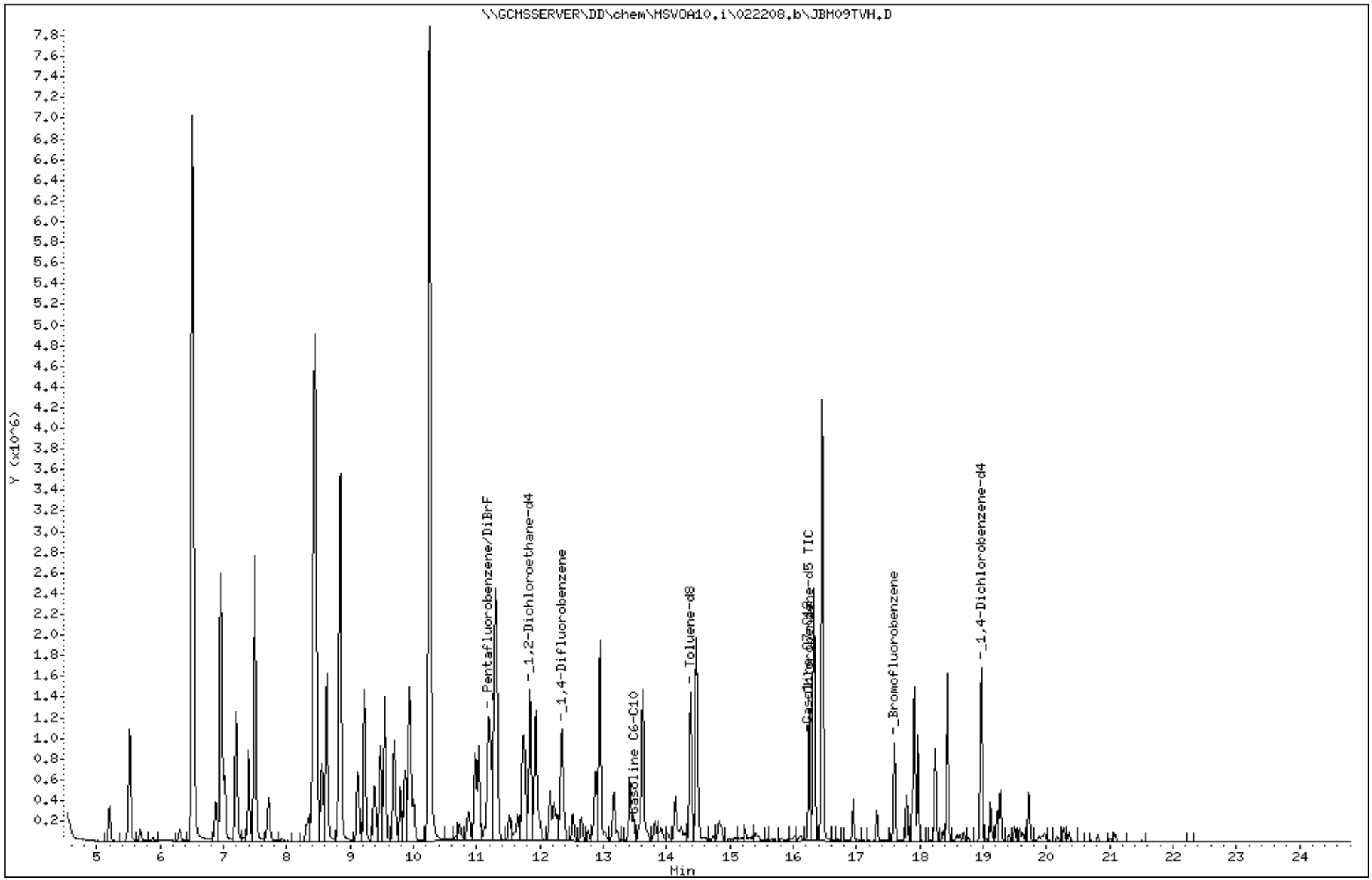

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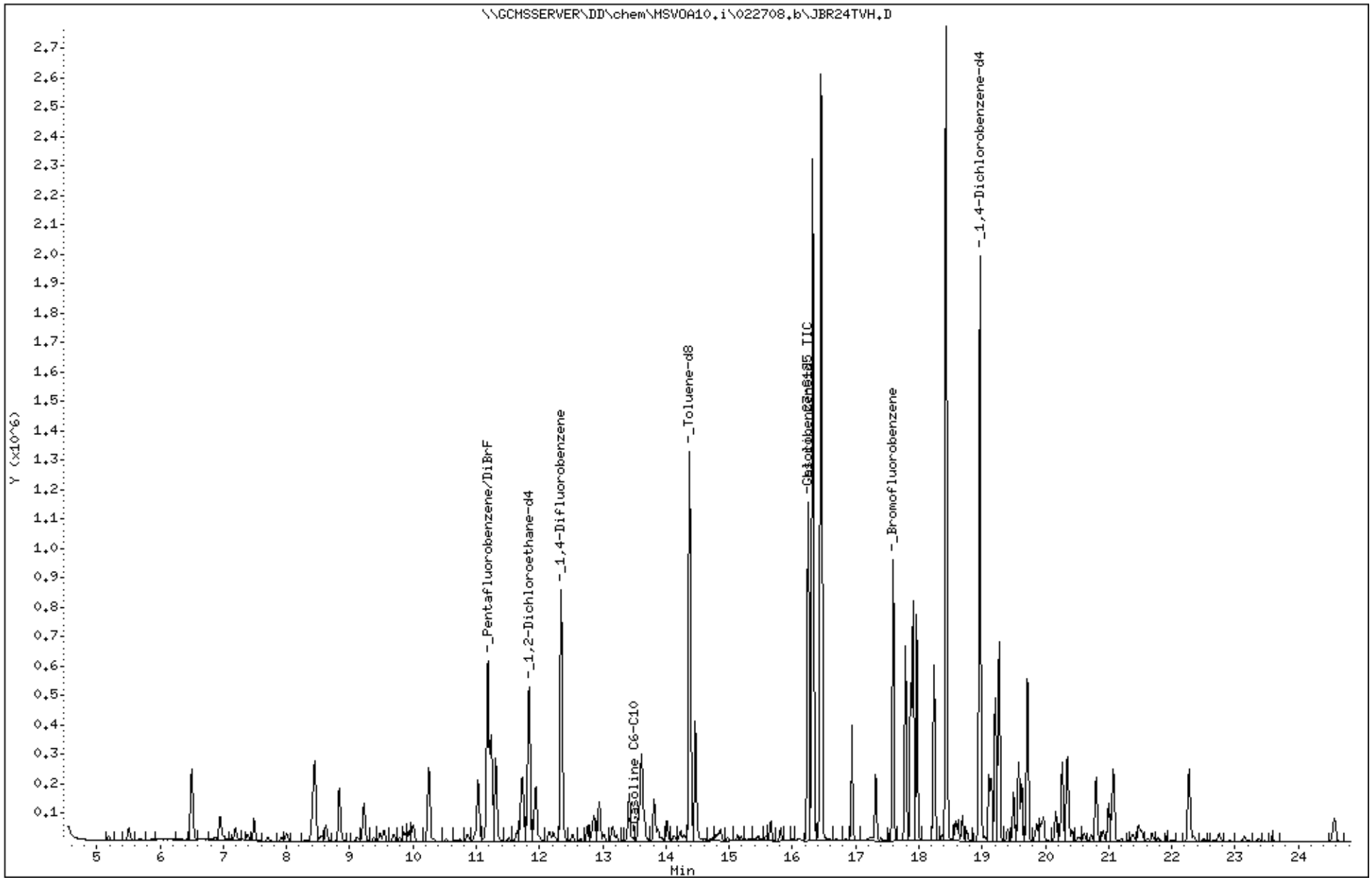

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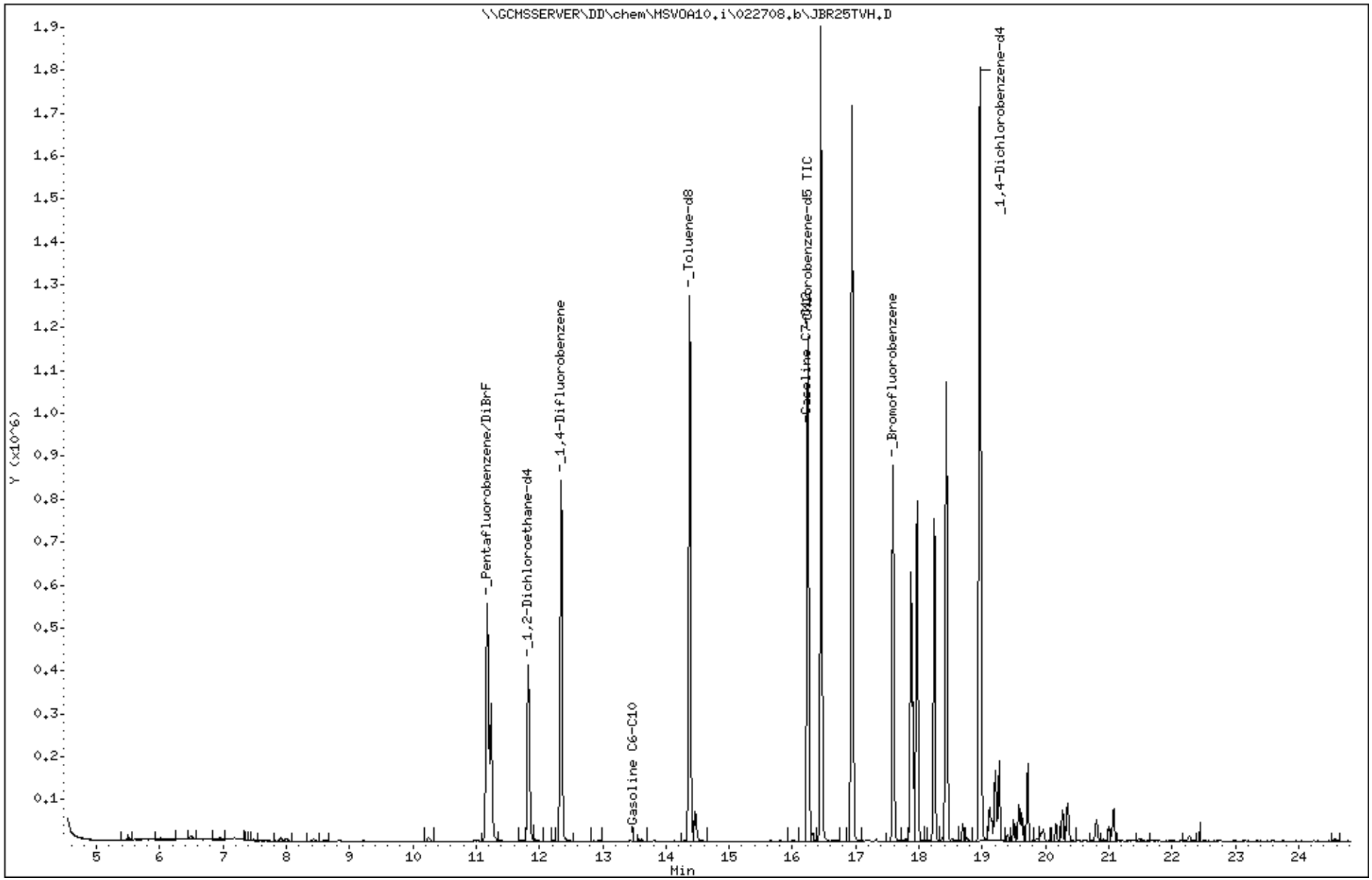

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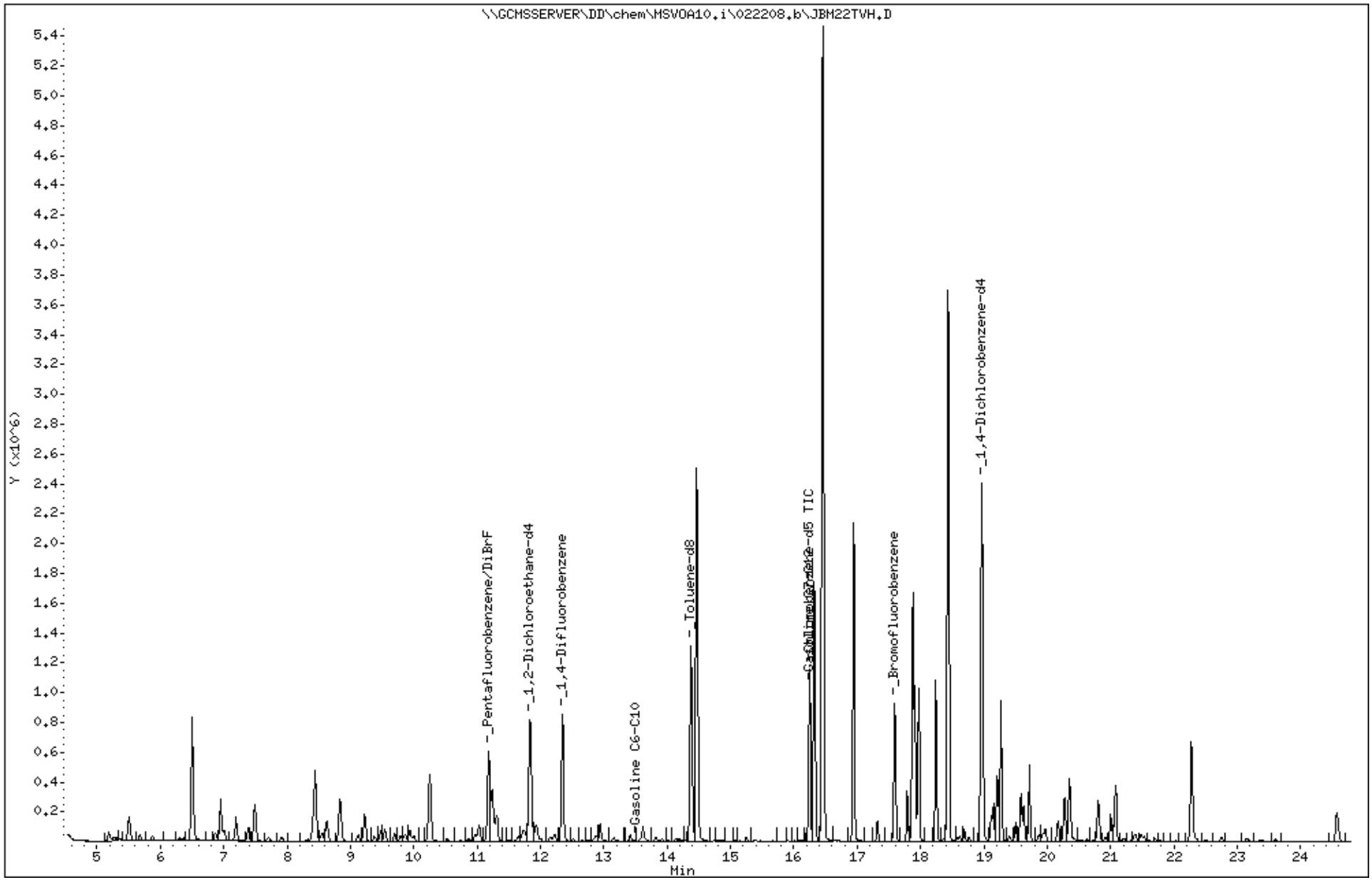
Date : 22-FEB-2008 20:43
Client ID: DYNA P&T
Sample Info: S,201289-007

Instrument: MSVOA10.i

Operator: VOA
Column diameter: 2.00

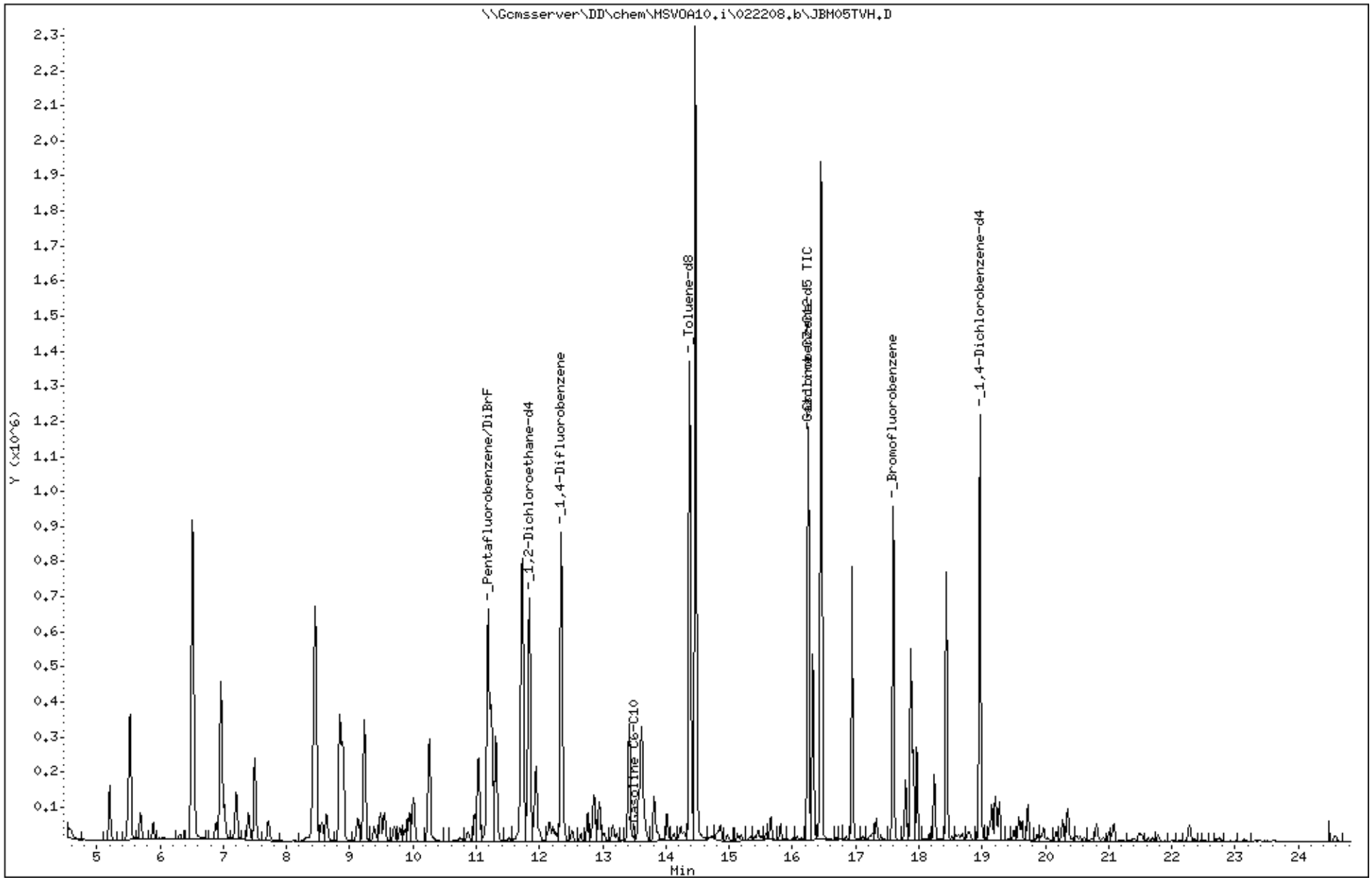
Column phase:



Data File: \\Gcmsserver\DD\chem\MSVOA10.i\022208.b\JBM05TVH.D
Date : 22-FEB-2008 10:55
Client ID: DYNA P&T
Sample Info: CCV/BS,QC429454,135120,1/1,S8009,0.01/100,

Instrument: MSVOA10.i
Operator: VOA
Column diameter: 2.00

Column phase:



Curtis & Tompkins, Ltd.

Dissolved Iron

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3010A
Project#:	001-09480-06	Analysis:	EPA 6010B
Analyte:	Iron	Sampled:	02/19/08
Units:	ug/L	Received:	02/19/08
Diln Fac:	1.000	Prepared:	02/21/08
Batch#:	135077	Analyzed:	02/21/08

Field ID	Type	Lab ID	Matrix	Result	RL
MW-7D	SAMPLE	201289-004	Filtrate	350	100
MW-9S	SAMPLE	201289-005	Filtrate	100	100
MW-9LF	SAMPLE	201289-006	Filtrate	ND	100
MW-9D	SAMPLE	201289-007	Filtrate	ND	100
	BLANK	QC429272	Water	ND	100

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3010A
Project#:	001-09480-06	Analysis:	EPA 6010B
Analyte:	Iron	Batch#:	135077
Field ID:	ZZZZZZZZZZ	Sampled:	02/07/08
MSS Lab ID:	201230-017	Received:	02/07/08
Matrix:	Water	Prepared:	02/21/08
Units:	ug/L	Analyzed:	02/21/08
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC429273		1,000	863.5	86	80-120		
BSD	QC429274		1,000	896.4	90	80-120	4	20
MS	QC429275	34,420	1,000	53,010	1859 NM	72-123		
MSD	QC429276		1,000	49,560	1514 NM	72-123	7	20

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrate Nitrogen

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Diln Fac:	1.000
Matrix:	Water	Batch#:	134957
Units:	mg/L	Received:	02/19/08

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
MW-7D	SAMPLE	201289-004	ND	0.05	02/19/08 09:40	02/19/08 19:42
MW-9S	SAMPLE	201289-005	ND	0.05	02/19/08 10:50	02/19/08 18:49
MW-9LF	SAMPLE	201289-006	ND	0.05	02/19/08 12:50	02/19/08 21:26
MW-9D	SAMPLE	201289-007	ND	0.05	02/19/08 12:00	02/19/08 23:10
	BLANK	QC428803	ND	0.05		02/19/08 09:58

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrate Nitrogen

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrate	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	134957
MSS Lab ID:	201260-002	Sampled:	02/18/08 08:50
Matrix:	Water	Received:	02/19/08

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC428804		1.000	1.097	110	80-120			1.000	02/19/08 10:15
BSD	QC428805		1.000	1.084	108	80-120	1	20	1.000	02/19/08 10:33
MS	QC428856	0.6101	2.500	3.247	105	80-120			5.000	02/19/08 14:18
MSD	QC428857		2.500	3.253	106	80-120	0	20	5.000	02/19/08 14:36

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Nitrite Nitrogen

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrite	Diln Fac:	1.000
Matrix:	Water	Batch#:	134957
Units:	mg/L	Received:	02/19/08

Field ID	Type	Lab ID	Result	RL	Sampled	Analyzed
MW-7D	SAMPLE	201289-004	ND	0.05	02/19/08 09:40	02/19/08 19:42
MW-9S	SAMPLE	201289-005	ND	0.05	02/19/08 10:50	02/19/08 18:49
MW-9LF	SAMPLE	201289-006	ND	0.05	02/19/08 12:50	02/19/08 21:26
MW-9D	SAMPLE	201289-007	ND	0.05	02/19/08 12:00	02/19/08 23:10
	BLANK	QC428803	ND	0.05		02/19/08 09:58

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Nitrite Nitrogen

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	EPA 300.0
Analyte:	Nitrogen, Nitrite	Units:	mg/L
Field ID:	ZZZZZZZZZZ	Batch#:	134957
MSS Lab ID:	201260-002	Sampled:	02/18/08 08:50
Matrix:	Water	Received:	02/19/08

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac	Analyzed
BS	QC428804		1.000	1.043	104	80-120			1.000	02/19/08 10:15
BSD	QC428805		1.000	1.034	103	80-120	1	20	1.000	02/19/08 10:33
MS	QC428856	0.1673	2.500	2.979	112	80-120			5.000	02/19/08 14:18
MSD	QC428857		2.500	2.992	113	80-120	0	20	5.000	02/19/08 14:36

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Biochemical Oxygen Demand

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	135069
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Prepared:	02/21/08 09:30
Diln Fac:	1.000	Analyzed:	02/26/08 12:45

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7D	SAMPLE	201289-004	63	5.0	02/19/08 09:40
MW-9S	SAMPLE	201289-005	32	5.0	02/19/08 10:50
MW-9LF	SAMPLE	201289-006	ND	5.0	02/19/08 12:50
MW-9D	SAMPLE	201289-007	81	5.0	02/19/08 12:00
	BLANK	QC429230	ND	5.0	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Biochemical Oxygen Demand

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5210B
Analyte:	Biochemical Oxygen Demand	Batch#:	135069
Field ID:	ZZZZZZZZZZ	Sampled:	02/19/08 10:30
MSS Lab ID:	201279-001	Received:	02/19/08
Matrix:	Water	Prepared:	02/21/08 09:30
Units:	mg/L	Analyzed:	02/26/08 12:45
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
BS	QC429231		198.0	209.7		106	85-115		
BSD	QC429232		198.0	203.7		103	85-115	3	20
SDUP	QC429233	1,892		2,054	5.000			8	25

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Chemical Oxygen Demand

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	135084
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Prepared:	02/21/08 13:30
Diln Fac:	1.000	Analyzed:	02/21/08 15:30

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7D	SAMPLE	201289-004	16	10	02/19/08 09:40
MW-9S	SAMPLE	201289-005	20	10	02/19/08 10:50
MW-9LF	SAMPLE	201289-006	100	10	02/19/08 12:50
MW-9D	SAMPLE	201289-007	100	10	02/19/08 12:00
	BLANK	QC429301	ND	10	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Chemical Oxygen Demand

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM5220D
Analyte:	Chemical Oxygen Demand	Batch#:	135084
Field ID:	ZZZZZZZZZZ	Sampled:	02/19/08 10:10
MSS Lab ID:	201283-003	Received:	02/19/08
Matrix:	Water	Prepared:	02/21/08 13:30
Units:	mg/L	Analyzed:	02/21/08 15:30
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC429302		50.00	52.40	105	90-110		
MS	QC429303	10.08	100.0	100.8	91	60-125		
MSD	QC429304		100.0	100.8	91	60-125	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Ferrous Iron (Fe+2)

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM3500FE-B
Analyte:	Ferrous Iron (Fe+2)	Batch#:	134993
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Analyzed:	02/20/08 08:15

Field ID	Type	Lab ID	Result	RL	Diln Fac	Sampled
MW-7D	SAMPLE	201289-004	12	1.0	10.00	02/19/08 09:40
MW-9S	SAMPLE	201289-005	0.51	0.10	1.000	02/19/08 10:50
MW-9LF	SAMPLE	201289-006	1.4	0.10	1.000	02/19/08 12:50
MW-9D	SAMPLE	201289-007	30	4.0	40.00	02/19/08 12:00
	BLANK	QC428948	ND	0.10	1.000	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Ferrous Iron (Fe+2)

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM3500FE-B
Analyte:	Ferrous Iron (Fe+2)	Batch#:	134993
Field ID:	MW-9D	Sampled:	02/19/08 12:00
MSS Lab ID:	201289-007	Received:	02/19/08
Matrix:	Water	Analyzed:	02/20/08 08:15
Units:	mg/L		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim	Diln Fac
MS	QC428949	30.24	0.8000	32.56	290 NM	63-135			40.00
MSD	QC428950		0.8000	31.38	142 NM	63-135	4	20	40.00
LCS	QC428951		0.8000	0.8817	110	90-110			1.000

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Orthophosphate Phosphorous

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Batch#:	135434
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Analyzed:	02/29/08 00:00
Diln Fac:	1.000		

Field ID	Type	Lab ID	Result	RL	Sampled
MW-7D	SAMPLE	201289-004	0.21	0.030	02/19/08 09:40
MW-9S	SAMPLE	201289-005	0.30	0.030	02/19/08 10:50
MW-9LF	SAMPLE	201289-006	0.16	0.030	02/19/08 12:50
MW-9D	SAMPLE	201289-007	0.48	0.030	02/19/08 12:00
	BLANK	QC430711	ND	0.030	

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Orthophosphate Phosphorous

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	METHOD
Project#:	001-09480-06	Analysis:	SM4500P-E
Analyte:	Orthophosphate (as P)	Diln Fac:	1.000
Field ID:	MW-7D	Batch#:	135434
MSS Lab ID:	201289-004	Sampled:	02/19/08 09:40
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Analyzed:	02/29/08 00:00

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
LCS	QC430712		0.2000	0.1928	96	80-120		
MS	QC430713	0.2078	0.2000	0.4941	143 *	77-136		
MSD	QC430714		0.2000	0.4843	138 *	77-136	2	20

*= Value outside of QC limits; see narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Phosphorous

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	SMWW18:4500P-B
Project#:	001-09480-06	Analysis:	SM4500P-E
Analyte:	Phosphorous	Sampled:	02/19/08
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Prepared:	02/22/08
Diln Fac:	1.000	Analyzed:	02/25/08
Batch#:	135117		

Field ID	Type	Lab ID	Result	RL
MW-7D	SAMPLE	201289-004	0.19	0.030
MW-9S	SAMPLE	201289-005	0.44	0.030
MW-9LF	SAMPLE	201289-006	0.16	0.030
MW-9D	SAMPLE	201289-007	0.20	0.030
	BLANK	QC429440	ND	0.030

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Phosphorous

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	SMWW18:4500P-B
Project#:	001-09480-06	Analysis:	SM4500P-E
Analyte:	Phosphorous	Batch#:	135117
Field ID:	MW-7D	Sampled:	02/19/08
MSS Lab ID:	201289-004	Received:	02/19/08
Matrix:	Water	Prepared:	02/22/08
Units:	mg/L	Analyzed:	02/25/08
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim
LCS	QC429441		0.1980	0.2121		107	64-138		
SDUP	QC429442	0.1940		0.1973	0.03000			2	30
SSPIKE	QC429443	0.1940	0.1980	0.2914		49	31-151		

RL= Reporting Limit
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Total Kjeldahl Nitrogen

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	SMWW20:4500-NORG
Project#:	001-09480-06	Analysis:	SM4500NH3-C
Analyte:	Nitrogen, Total Kjeldahl	Sampled:	02/19/08
Matrix:	Water	Received:	02/19/08
Units:	mg/L	Prepared:	02/21/08
Diln Fac:	1.000	Analyzed:	02/22/08
Batch#:	135085		

Field ID	Type	Lab ID	Result	RL
MW-7D	SAMPLE	201289-004	1.5	1.0
MW-9S	SAMPLE	201289-005	2.1	1.0
MW-9LF	SAMPLE	201289-006	ND	1.0
MW-9D	SAMPLE	201289-007	1.6	1.0
	BLANK	QC429305	ND	1.0

ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Kjeldahl Nitrogen

Lab #:	201289	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	SMWW20:4500-NORG
Project#:	001-09480-06	Analysis:	SM4500NH3-C
Analyte:	Nitrogen, Total Kjeldahl	Diln Fac:	1.000
Field ID:	ZZZZZZZZZZ	Batch#:	135085
Matrix:	Water	Prepared:	02/21/08
Units:	mg/L	Analyzed:	02/22/08

Type	MSS Lab ID	Lab ID	MSS Result	Spiked	Result	RL	%REC	Limits	RPD	Lim	Sampled	Received
LCS		QC429306		10.00	9.630		96	64-120				
MS	201237-001	QC429307	171.5	10.00	183.1		116	42-132			02/15/08	02/15/08
MSD	201237-001	QC429308		10.00	181.1		95	42-132	1	36	02/15/08	02/15/08
SDUP	200841-005	QC429573	7.450		7.110	1.000			5	36	01/30/08	01/30/08

RL= Reporting Limit
RPD= Relative Percent Difference

CHAIN OF CUSTODY

Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

Page ____ of ____

C & T LOGIN #: 201289

Project No.: 001-09480-06
Project Name: Hanson Sunol
Project P.O.: 001-09480-06
Turnaround Time: Standard / Short*

Sampler: TRC
Report To: Katrin Schliewen
Company: LFR
Telephone: 510-652-4500
Fax: 510-652-2246

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE
-1	MW-1	2/18/08 / 13:56		X		4	X			X
-2	MW-7S	2/18/08 / 15:10		X		4	X			X
-3	MW-8	2/18/08 / 16:10		X		4	X			X
-4	MW-7D	2/19/08 / 9:40		X		10	X	X		X
-5	MW-9S	2/19/08 / 10:50		X		10	X	X		X
-6	MW-9LF	2/19/08 / 12:50		X		10	X	X		X
-7	MW-9D	2/19/08 / 12:00		X		10	X	X		X
-8	TRIP Blank			X		2				

Analysis

TPHG / BTEX / MTBE (8260B)	TPHd (8015)	Nitrate / Nitrite (300.0)	TKN (SM 4500NH3-C)	Ortho Phosphate (SM4500P-E)	Dissolved Iron (6010)	Ferrous Iron (SM3500FED)	BOD (5210 B)	COD (SM5220D)
X	X							
X	X							
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X

HOLD -

Notes: Please fix and filter dissolved Fe upon arrival to lab
* Hold time is short for some samples

SAMPLE RECEIPT
☒ Intact ☐ Cold
☒ On Ice ☐ Ambient
Preservative Correct?
☐ Yes ☐ No ☐ N/A

RELINQUISHED BY:
Tom Collins — 2/19/08 17:15 DATE / TIME
DATE / TIME
DATE / TIME

RECEIVED BY:
2/19/08 17:15 DATE / TIME
DATE / TIME
DATE / TIME

SIGNATURE

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 201289 Date Received: 2/19/08 Number of Coolers: 2
Client: LFR Project: Hanson Sand

A. Preliminary Examination Phase
Date Opened: 2/19 By (print): KWellbrock (sign) KWellbrock

1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
If YES, enter carrier name and airbill number: _____
2. Were custody seals on outside of cooler? ..... YES (NO)
How many and where? _____ Seal date: _____ Seal name: _____
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
Type of ice: wet Temperature: 1.8° - only 1/2 coolers w/ temp Ø
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
If YES, enter time they were transferred to the freezer _____

B. Login Phase
Date Logged In: 2/19 By (print): KWellbrock (sign) KWellbrock

1. Did all bottles arrive unbroken? ..... YES NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... YES NO
3. Did bottle labels agree with custody papers? ..... YES NO
4. Were appropriate containers used for the tests indicated? ..... YES NO
5. Were correct preservatives added to samples? ..... YES NO
6. Was sufficient amount of sample sent for tests indicated? ..... YES NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... YES NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
If YES, give details below.
Who was called? _____ By whom? _____ Date: _____

Additional Comments:

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 201316
ANALYTICAL REPORT

LFR Levine Fricke	Project : 001-09480-06
1900 Powell Street	Location : Hanson Sunol
Emeryville, CA 94608	Level : II

Sample ID	Lab ID
OXY-1LF	201316-001
OXY-1D	201316-002
OXY-1S	201316-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 02/28/2008
Project Manager

Signature: _____ Date: 03/03/2008
Operations Manager

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**201316**
Client:	**LFR Levine Fricke**
Project:	**001-09480-06**
Location:	**Hanson Sunol**
Request Date:	**02/20/08**
Samples Received:	**02/20/08**

This hardcopy data package contains sample and QC results for three water samples, requested for the above referenced project on 02/20/08. The samples were received on ice and intact, directly from the field. All data were e-mailed to Katrin Schliewen on 02/28/08.

TPH-Extractables by GC (EPA 8015B):
No analytical problems were encountered.

Volatile Organics by GC/MS (EPA 8260B):
No analytical problems were encountered.

Curtis & Tompkins, Ltd.

Total Extractable Hydrocarbons

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Sampled:	02/20/08
Units:	ug/L	Received:	02/20/08
Diln Fac:	1.000	Prepared:	02/25/08
Batch#:	135211		

Field ID: OXY-1LF — Lab ID: 201316-001
Type: SAMPLE — Analyzed: 02/27/08

Analyte	Result	RL
Diesel C10-C24	110 Y	50

Surrogate	%REC	Limits
Hexacosane	87	63-130

Field ID: OXY-1D — Lab ID: 201316-002
Type: SAMPLE — Analyzed: 02/26/08

Analyte	Result	RL
Diesel C10-C24	1,300	50

Surrogate	%REC	Limits
Hexacosane	65	63-130

Field ID: OXY-1S — Lab ID: 201316-003
Type: SAMPLE — Analyzed: 02/27/08

Analyte	Result	RL
Diesel C10-C24	3,700	50

Surrogate	%REC	Limits
Hexacosane	95	63-130

Type: BLANK — Analyzed: 02/26/08
Lab ID: QC429830

Analyte	Result	RL
Diesel C10-C24	ND	50

Surrogate	%REC	Limits
Hexacosane	99	63-130

Y= Sample exhibits chromatographic pattern which does not resemble standard
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Total Extractable Hydrocarbons

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 3520C
Project#:	001-09480-06	Analysis:	EPA 8015B
Matrix:	Water	Batch#:	135211
Units:	ug/L	Prepared:	02/25/08
Diln Fac:	1.000	Analyzed:	02/26/08

Type: BS
Lab ID: QC429831
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits
Diesel C10-C24	2,500	1,740	70	61-120

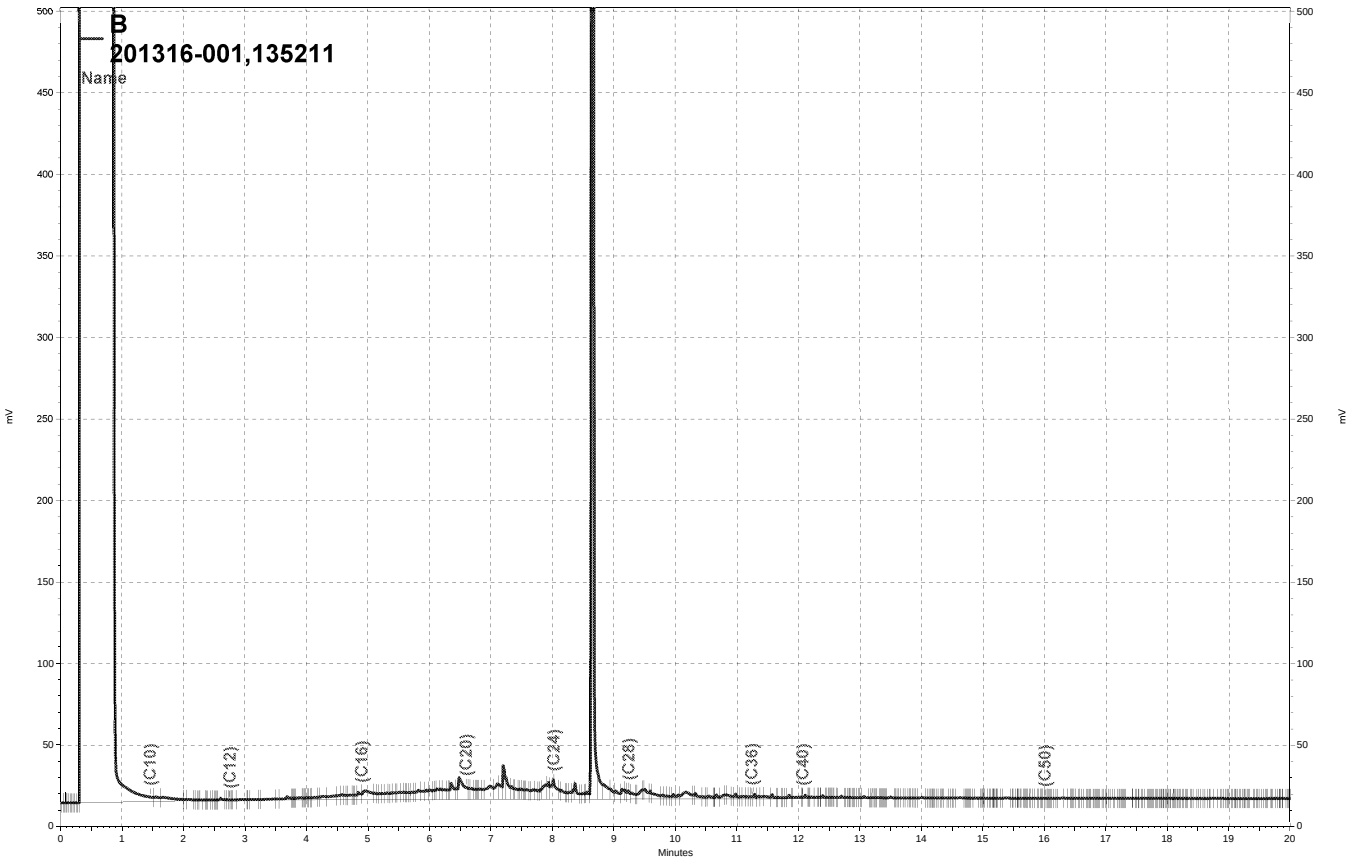
Surrogate	%REC	Limits
Hexacosane	67	63-130

Type: BSD
Lab ID: QC429832
Cleanup Method: EPA 3630C

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Diesel C10-C24	2,500	1,819	73	61-120	4	29

Surrogate	%REC	Limits
Hexacosane	70	63-130

RPD= Relative Percent Difference



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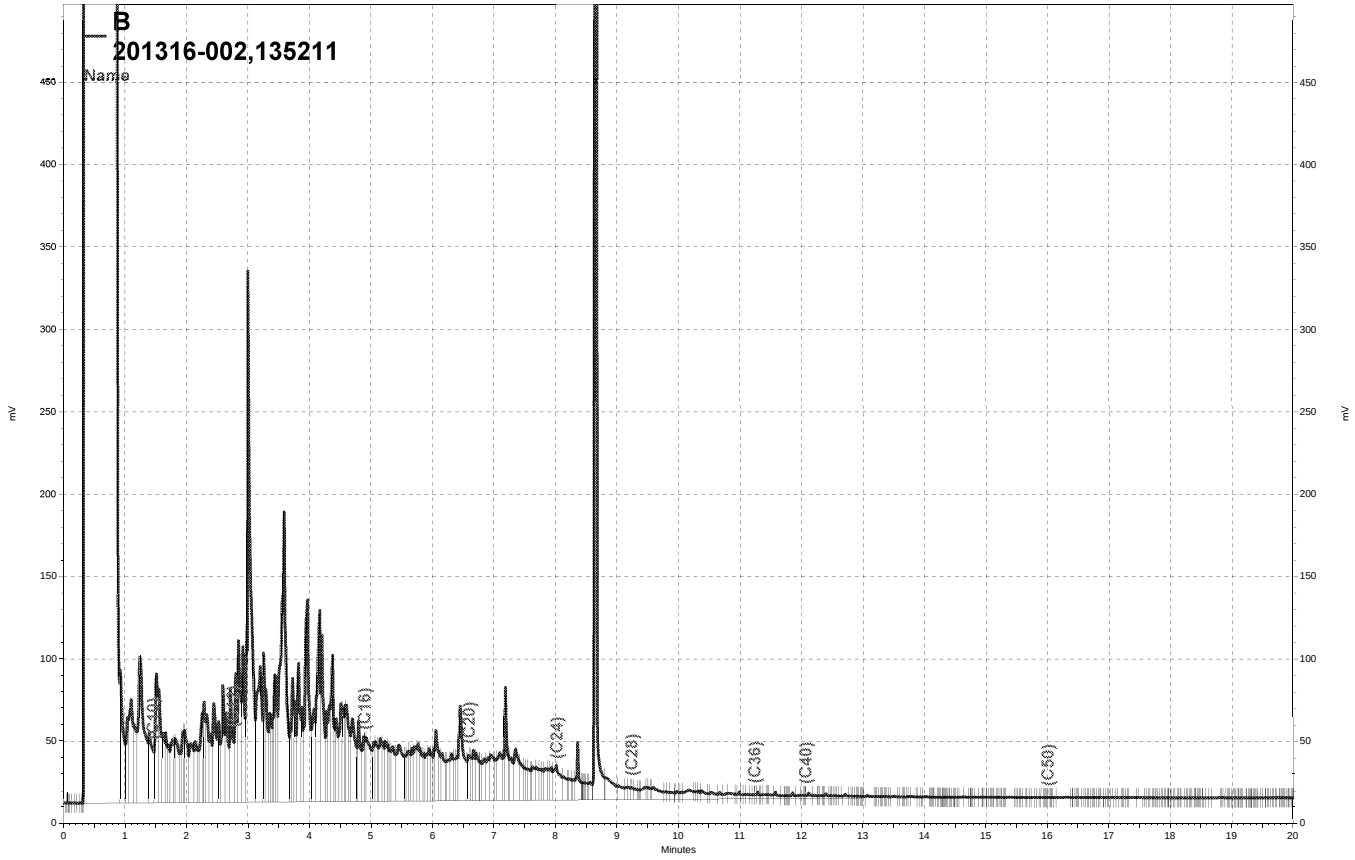

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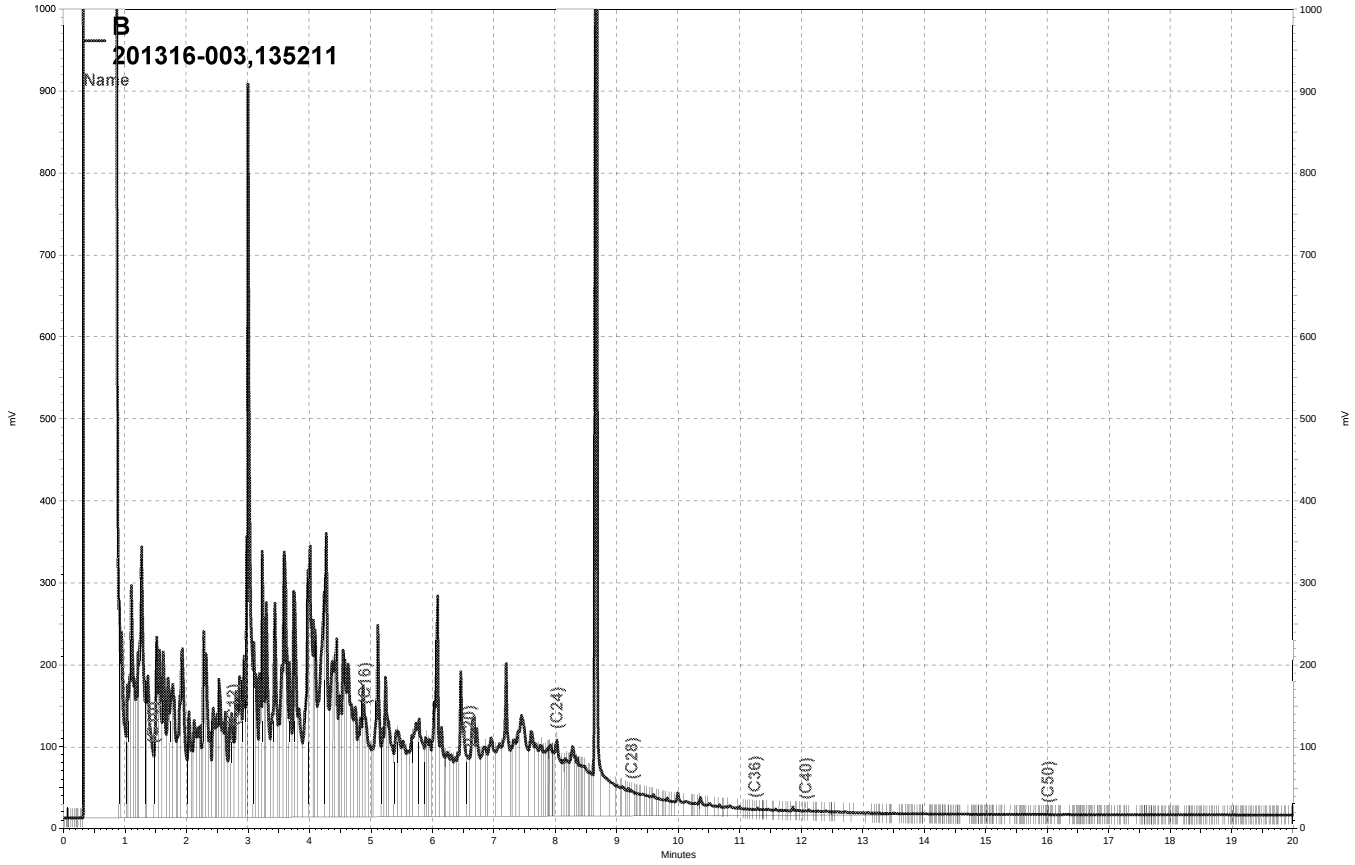

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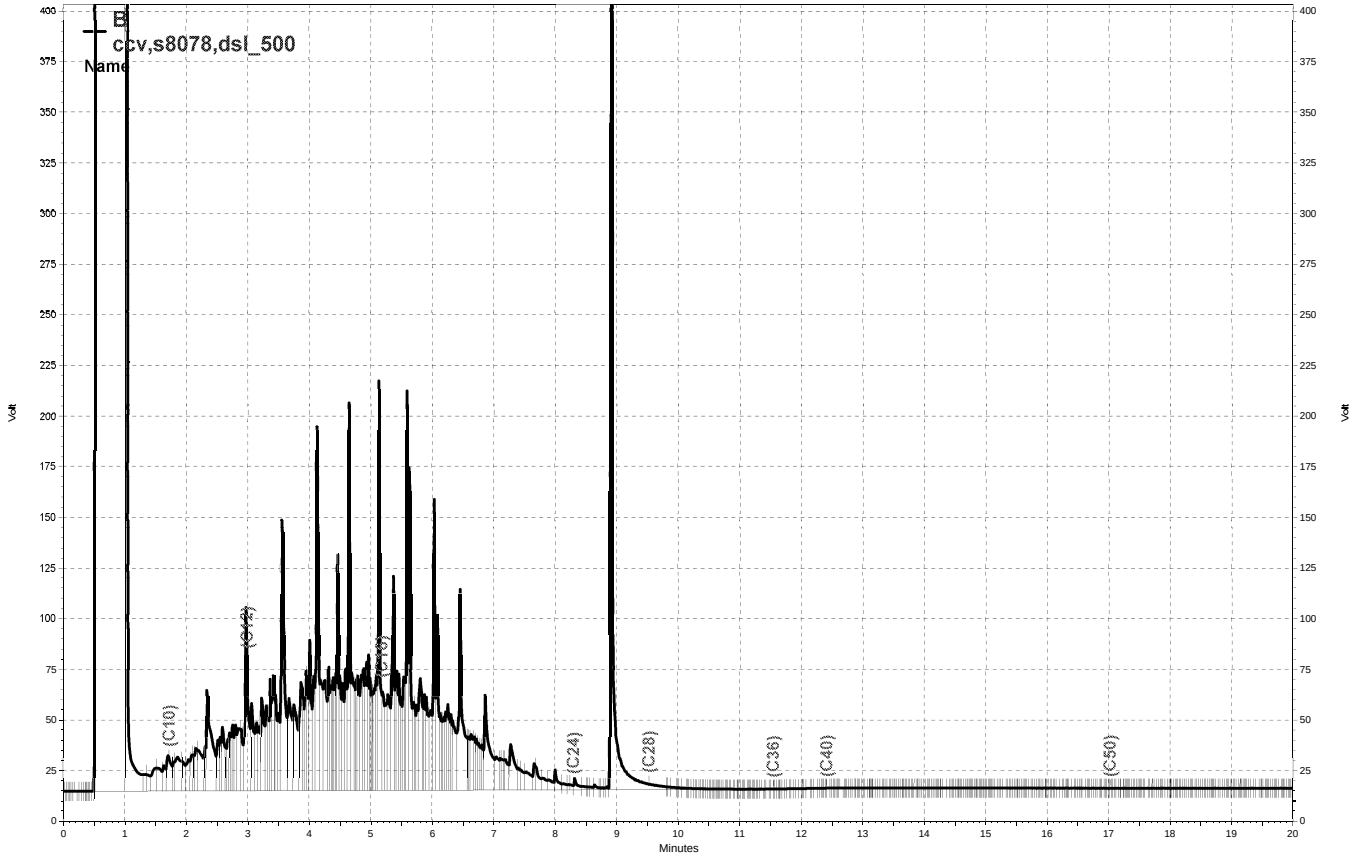

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Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/20/08
Units:	ug/L	Received:	02/20/08
Diln Fac:	1.000		

Field ID:	OXY-1LF	Batch#:	135180
Type:	SAMPLE	Analyzed:	02/24/08
Lab ID:	201316-001		

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	99	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	117	80-120

Field ID:	OXY-1D	Batch#:	135180
Type:	SAMPLE	Analyzed:	02/25/08
Lab ID:	201316-002		

Analyte	Result	RL
Gasoline C7-C12	280	50
MTBE	ND	0.50
Benzene	3.7	0.50
Toluene	3.2	0.50
Ethylbenzene	0.52	0.50
m,p-Xylenes	5.5	0.50
o-Xylene	12	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	106	80-123
1,2-Dichloroethane-d4	95	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	88	80-120

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/20/08
Units:	ug/L	Received:	02/20/08
Diln Fac:	1.000		

Field ID:	OXY-1S	Batch#:	135249
Type:	SAMPLE	Analyzed:	02/26/08
Lab ID:	201316-003		

Analyte	Result	RL
Gasoline C7-C12	2,000	50
MTBE	ND	0.50
Benzene	3.3	0.50
Toluene	6.4	0.50
Ethylbenzene	24	0.50
m,p-Xylenes	24	0.50
o-Xylene	17	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	88	76-138
Toluene-d8	93	80-120
Bromofluorobenzene	87	80-120

Type:	BLANK	Batch#:	135180
Lab ID:	QC429695	Analyzed:	02/24/08

Analyte	Result	RL
Gasoline C7-C12	NA	
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-123
1,2-Dichloroethane-d4	98	76-138
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Sampled:	02/20/08
Units:	ug/L	Received:	02/20/08
Diln Fac:	1.000		

Type: BLANK
Lab ID: QC429728
Batch#: 135180
Analyzed: 02/24/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	103	80-123
1,2-Dichloroethane-d4	99	76-138
Toluene-d8	99	80-120
Bromofluorobenzene	102	80-120

Type: BLANK
Lab ID: QC429993
Batch#: 135249
Analyzed: 02/26/08

Analyte	Result	RL
Gasoline C7-C12	ND	50
MTBE	ND	0.50
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Dibromofluoromethane	97	80-123
1,2-Dichloroethane-d4	102	76-138
Toluene-d8	97	80-120
Bromofluorobenzene	99	80-120

NA= Not Analyzed
ND= Not Detected
RL= Reporting Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135180
Units:	ug/L	Analyzed:	02/24/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429696

Analyte	Spiked	Result	%REC	Limits
MTBE	12.50	12.33	99	60-136
Benzene	12.50	12.39	99	80-120
Toluene	12.50	12.20	98	80-121
Ethylbenzene	12.50	12.84	103	80-124
m,p-Xylenes	25.00	24.38	98	80-128
o-Xylene	12.50	12.04	96	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	97	76-138
Toluene-d8	100	80-120
Bromofluorobenzene	97	80-120

Type: BSD Lab ID: QC429697

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	12.50	11.83	95	60-136	4	20
Benzene	12.50	12.12	97	80-120	2	20
Toluene	12.50	12.09	97	80-121	1	20
Ethylbenzene	12.50	12.46	100	80-124	3	20
m,p-Xylenes	25.00	24.04	96	80-128	1	20
o-Xylene	12.50	11.84	95	80-123	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	96	76-138
Toluene-d8	100	80-120
Bromofluorobenzene	99	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135180
Units:	ug/L	Analyzed:	02/24/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429726

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,002	100	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	101	80-123
1,2-Dichloroethane-d4	100	76-138
Toluene-d8	99	80-120
Bromofluorobenzene	99	80-120

Type: BSD Lab ID: QC429727

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	1,017	102	80-120	2	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	97	76-138
Toluene-d8	98	80-120
Bromofluorobenzene	97	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135249
Units:	ug/L	Analyzed:	02/26/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429989

Analyte	Spiked	Result	%REC	Limits
MTBE	25.00	24.53	98	60-136
Benzene	25.00	22.59	90	80-120
Toluene	25.00	24.33	97	80-121
Ethylbenzene	25.00	26.91	108	80-124
m,p-Xylenes	50.00	51.03	102	80-128
o-Xylene	25.00	26.24	105	80-123

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	87	76-138
Toluene-d8	95	80-120
Bromofluorobenzene	93	80-120

Type: BSD Lab ID: QC429990

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	25.00	22.56	90	60-136	8	20
Benzene	25.00	22.98	92	80-120	2	20
Toluene	25.00	25.64	103	80-121	5	20
Ethylbenzene	25.00	22.80	91	80-124	17	20
m,p-Xylenes	50.00	42.43	85	80-128	18	20
o-Xylene	25.00	23.59	94	80-123	11	20

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	97	76-138
Toluene-d8	97	80-120
Bromofluorobenzene	92	80-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Gasoline by GC/MS

Lab #:	201316	Location:	Hanson Sunol
Client:	LFR Levine Fricke	Prep:	EPA 5030B
Project#:	001-09480-06	Analysis:	EPA 8260B
Matrix:	Water	Batch#:	135249
Units:	ug/L	Analyzed:	02/26/08
Diln Fac:	1.000		

Type: BS Lab ID: QC429991

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,000	1,005	101	80-120

Surrogate	%REC	Limits
Dibromofluoromethane	98	80-123
1,2-Dichloroethane-d4	98	76-138
Toluene-d8	97	80-120
Bromofluorobenzene	95	80-120

Type: BSD Lab ID: QC429992

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	1,000	973.6	97	80-120	3	20

Surrogate	%REC	Limits
Dibromofluoromethane	100	80-123
1,2-Dichloroethane-d4	87	76-138
Toluene-d8	91	80-120
Bromofluorobenzene	107	80-120

RPD= Relative Percent Difference

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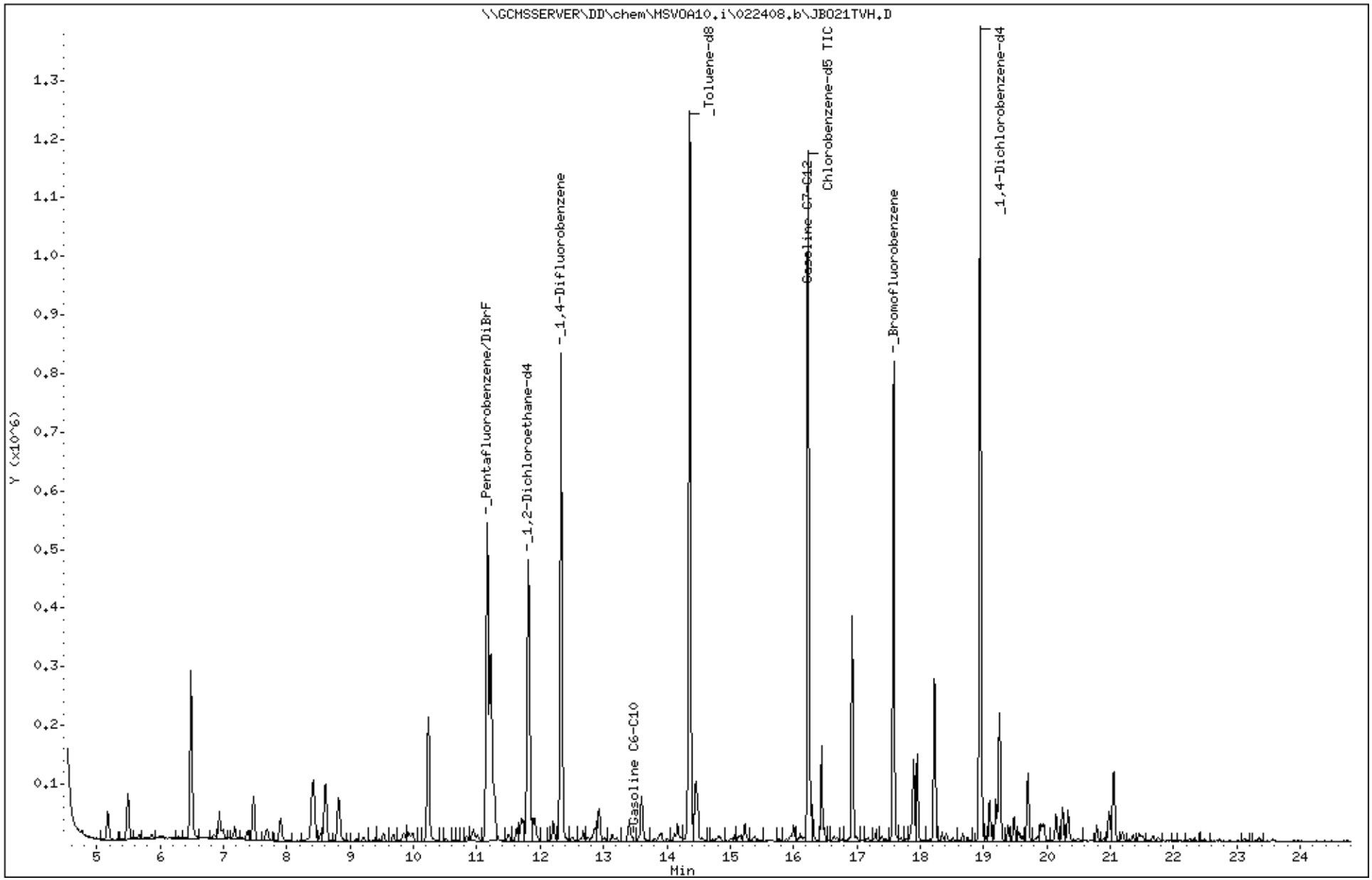
Date : 25-FEB-2008 00:22
Client ID: DYNA P&T
Sample Info: S,201316-002

Instrument: MSVOA10.i
Operator: VOA
Column diameter: 2.00

Column phase:



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Sample Info: S,201316-003
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Operator: VOA
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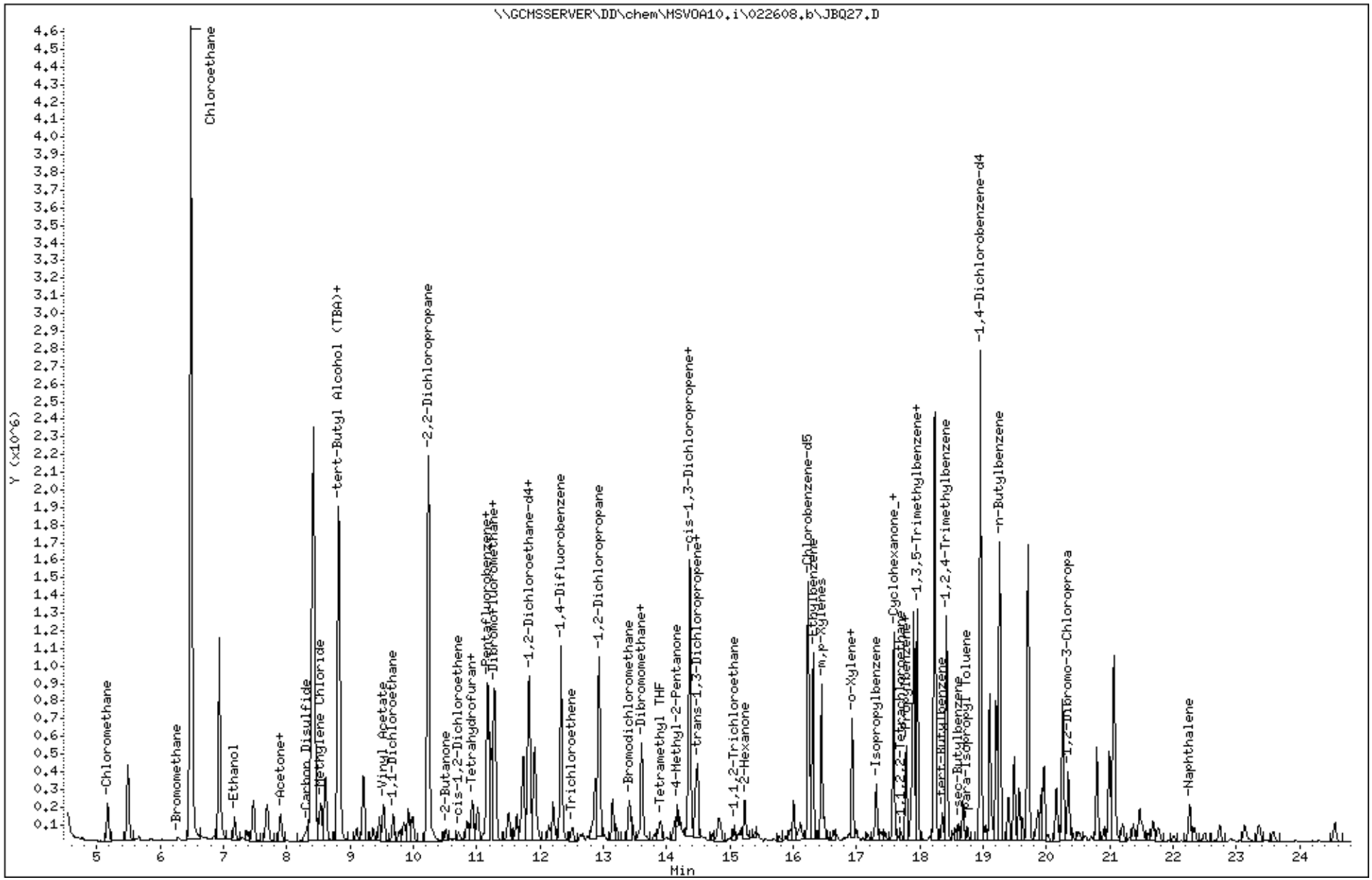
Column diameter: 0.32



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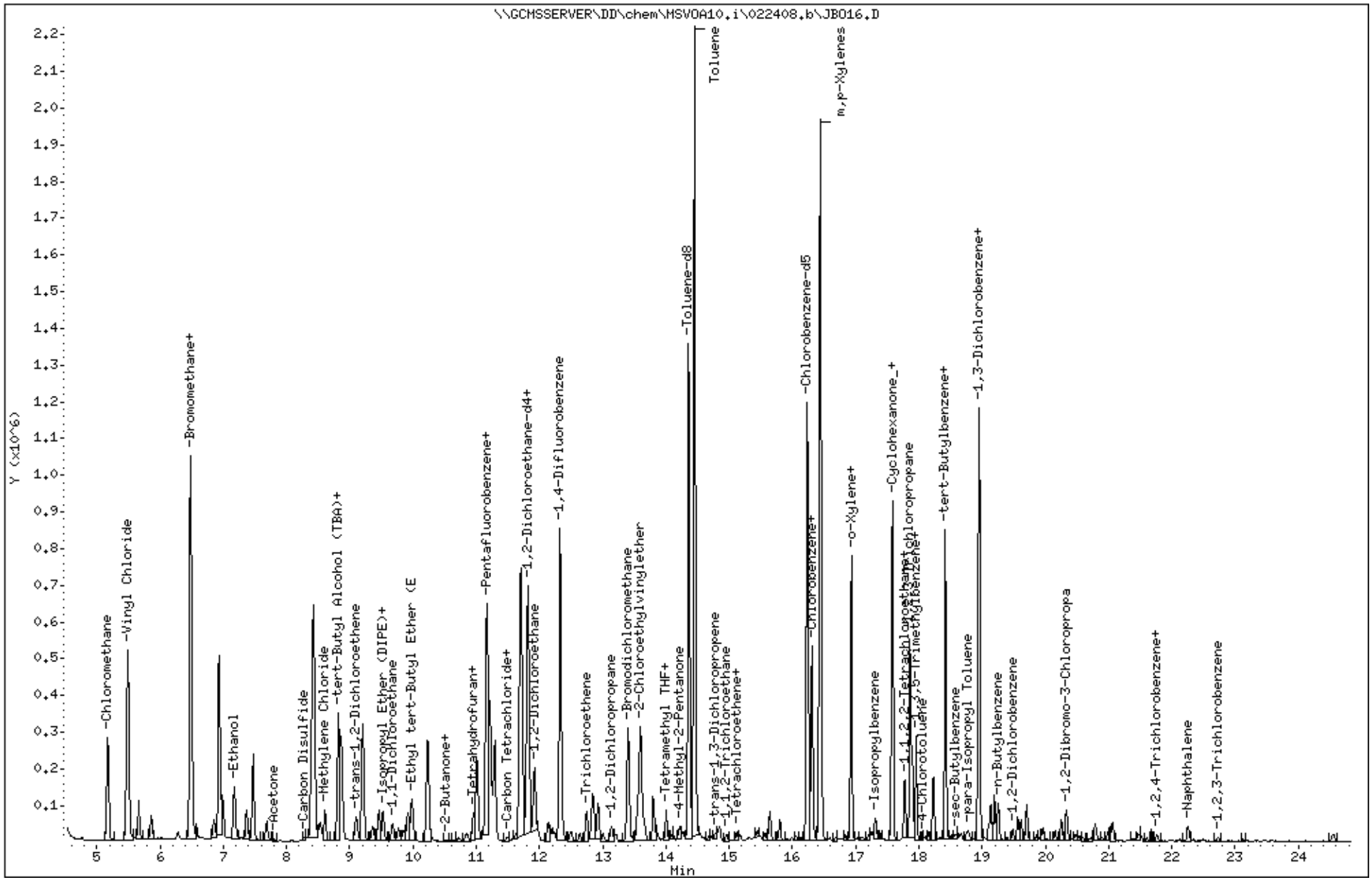
Operator: VOA
Column phase: RTx Volatiles
Column diameter: 0.32



Curtis & Tompkins, Ltd.
Analytical Laboratory Since 1878
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900 Phone
(510) 486-0532 Fax

CHAIN OF CUSTODY

C & T LOGIN #: 201316

Sampler: Tom Collins
Report To: Katrin Schlieven
Company: LFR
Telephone: 510-652-4500
Fax: 510-652-2246

Project No.: 001-09480-06
Project Name: Hanson Sunol
Project P.O.: 001-09480-06
Turnaround Time: Standard

Lab No.	Sample ID.	Sampling Date Time	Matrix: Soil	Water	Waste	# of Containers	Preservative: HCL	H_2SO_4	HNO_3	ICE	Analysis: TPHd (8015)	TPHg/BTEX (MTBE (8260B))
-1	OXY-1LF	2/20/08 9:35		X		4	X				X	X
-2	OXY-1D	2/20/08 10:45		X		4	X				X	X
-3	OXY-1S	2/20/08 11:30		X		4	X				X	X

Notes:

SAMPLE RECEIPT
☐ Intact ☑ Cold
☒ On Ice ☐ Ambient

Preservative Correct?
☐ Yes ☐ No ☐ N/A

RELINQUISHED BY:

Tom Collins 2/20/08 12:35 DATE / TIME

DATE / TIME

DATE / TIME

RECEIVED BY:

2/20/08 12:30 DATE / TIME

DATE / TIME

DATE / TIME

SIGNATURE

SOP Volume: Client Services
Section: 1.1.2
Page: 1 of 1
Effective Date: 08-Aug-07
Revision: 3 Number 1 of 3
Filename: F:\QC\Forms\QC\Cooler.wpd

Curtis & Tompkins, Ltd.

COOLER RECEIPT CHECKLIST

Login#: 20136 Date Received: 2/20/08 Number of Coolers: 1
Client: LFR Project: Hanson Sunol

A. Preliminary Examination Phase
Date Opened: 2/20 By (print): KWellbrock (sign) KWellbrock
1. Did cooler come with a shipping slip (airbill, etc.)? ..... YES (NO)
If YES, enter carrier name and airbill number:
2. Were custody seals on outside of cooler? ..... YES (NO)
How many and where? Seal date: Seal name:
3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES NO N/A
4. Were custody papers dry and intact when received? ..... (YES) NO
5. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO
6. Did you sign the custody papers in the appropriate place? ..... (YES) NO
7. Was project identifiable from custody papers? ..... (YES) NO
If YES, enter project name at the top of this form.
8. Describe type of packing in cooler: bubble wrap, foam blocks
9. If required, was sufficient ice used? Samples should be <=6 degrees C. ..... YES NO
Type of ice: wet Temperature: 9.5 - direct from field on ice
10. Were Encore sampling devices present in the cooler? ..... YES (NO)
If YES, enter time they were transferred to the freezer

B. Login Phase
Date Logged In: 2/20 By (print): KWellbrock (sign) KWellbrock
1. Did all bottles arrive unbroken? ..... (YES) NO
2. Were labels in good condition and complete (ID, date, time, signature, etc.)? ..... (YES) NO
3. Did bottle labels agree with custody papers? ..... (YES) NO
4. Were appropriate containers used for the tests indicated? ..... (YES) NO
5. Were correct preservatives added to samples? ..... (YES) NO
6. Was sufficient amount of sample sent for tests indicated? ..... (YES) NO
7. Were bubbles absent in VOA samples? If NO, list sample Ids below ..... (YES) NO
8. Was the client contacted concerning this sample delivery? ..... YES NO
If YES, give details below.
Who was called? By whom? Date:

Additional Comments:
B7: 1/3 0X4-1s VOAs w/ Bubble

Client: LFR, Inc. - Katrin Schliewen
Project: LFR-2071
Report Date: January 30, 2008
Run Date: January 22, 2008

Prepared for LFR, Inc.

Prepared by RespirTek, Inc.

The enclosed data relates only to those samples received by the laboratory.

RespirTek
Consulting Laboratory

Client: LFR, Inc. - Katrin Schliewen
Project: LFR-2071
Report Date: January 30, 2008
Run Date: January 22, 2008

Final Report

Heterotrophic Plate Count Results

Aerobic

		48 Hours	96 Hours	
Sample ID	**HPC/SD**	**Results (cfu/mL)**	**Results (cfu/mL)**	**Comments**
MW-9D	HPC	100 - 200*	800 - 900*	Little Growth
MW-9D	SD	200 - 300*	1,800 - 2,300*	Small white colonies
MW-9S	HPC	3,100 - 3,400	11,100 - 12,000	Mixed Consortium
MW-9LF	HPC	0 - 100*	1,100 - 1,600*	Small white colonies

Control	Result
Air	2
Dilution H20 (aerobic)	1
Stock Solution - MTBE	0
Positive Control (aerobic)	TNTC

Specific Degrader
20 mg/L Gasoline

TNTC: Too numerous to count
cfu/mL: Colony forming units per mL
HPC: Heterotrophic Plate Count
SD: Specific Degrader

Date of Sample Collection: January 21, 2008 at 1200.

* Sample did not meet limits for countable based on method specifications.

Client: LFR, Inc. - Katrin Schliewen
Project: LFR-2079
Report Date: February 26, 2008
Run Date: February 20, 2008
Total Pages in Report: 3

Prepared for LFR, Inc.

Prepared by RespirTek, Inc.

The enclosed data relates only to those samples received by the laboratory.

RespirTek
Consulting Laboratory

Client: LFR, Inc. - Katrin Schliewen
Project: LFR-2079
Report Date: February 26, 2008
Run Date: February 20, 2008

Final Report

Heterotrophic Plate Count Results

Aerobic

		48 Hours	96+ Hours	
Sample ID	**HPC/SD**	**Results (cfu/mL)**	**Results (cfu/mL)**	**Comments**
MW-7D	HPC	13,400 - 16,900	30,000 - 37,000	Mixed consortium
MW-7D	SD	17,400 - 17,600	50,000 - 61,000	Mixed consortium
MW-9S	HPC	1,270,000 - 1,620,000	1,460,000 - 1,840,000	Mixed consortium
MW-9S	SD	1,390,000 - 1,450,000	1,700,000 - 1,860,000	Mixed consortium
MW-9D	HPC	1,210,000 - 1,620,000	1,480,000 - 1,790,000	Mixed consortium
MW-9D	SD	1,520,000 - 1,600,000	1,630,000 - 1,800,000	Mixed consortium
MW-9LF	HPC	0 - 100*	0 - 200*	Little to no growth
MW-9LF	SD	0 - 100*	100*	Little to no growth

Control	Result
Air	3
Dilution H20 (aerobic)	0
Stock Solution - MTBE	2
Positive Control (aerobic)	TNTC

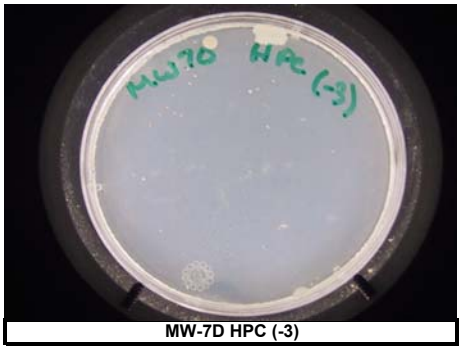
Specific Degrader
20 mg/L Gasoline

TNTC: Too numerous to count
cfu/mL: Colony forming units per mL
HPC: Heterotrophic Plate Count
SD: Specific Degrader

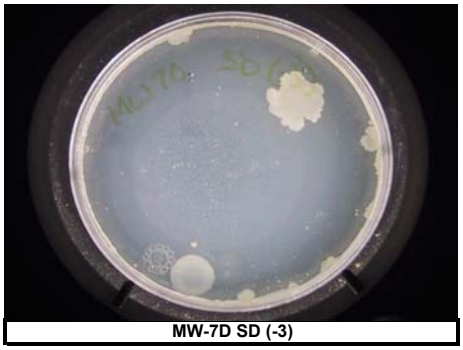
Date of Sample Collection: February 19, 2008 at 0940.

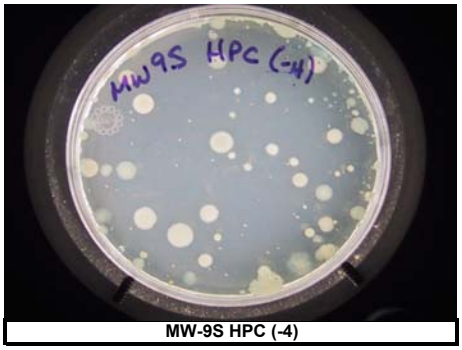
* Sample did not meet limits for countable based on method specifications.

Client: LFR, Inc. - Katrin Schliewen
Project: LFR-2079
Report Date: February 26, 2008
Run Date: February 20, 2008



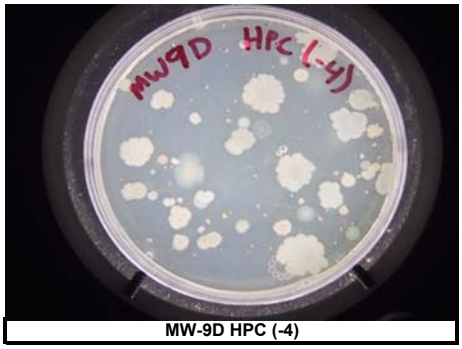
MW-7D HPC (-3)


MW-7D SD (-3)



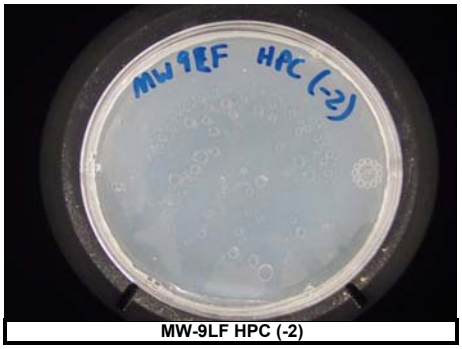
MW-9S HPC (-4)

MW-9S SD (-4)

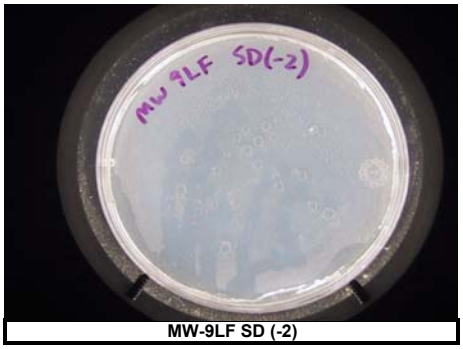


MW-9D HPC (-4)

MW-9D SD (-4)



MW-9LF HPC (-2)



MW-9LF SD (-2)

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0802444

Work Order Summary

CLIENT:	Ms. Katrin Schliewen LFR Levine-Fricke 1900 Powell Street Suite 1200 Emeryville, CA 94608	**BILL TO:**	Ms. Katrin Schliewen LFR Levine-Fricke 1900 Powell Street Suite 1200 Emeryville, CA 94608
PHONE:	510-596-9637	**P.O. #**	09480-06
FAX:		**PROJECT #**	001-09480-06 HANSON SUNOL SPARGE
DATE RECEIVED:	02/22/2008	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	03/05/2008		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SG-3 2-18-08	Modified TO-17		
02A	SG-4 2-18-08	Modified TO-17		
03A	SG-3 2/19/08	Modified TO-17		
04A	SG-4 2/19/08	Modified TO-17		
05A	Lab Blank	Modified TO-17	NA	NA
06A	CCV	Modified TO-17	NA	NA
07A	LCS	Modified TO-17	NA	NA

CERTIFIED BY: Linda J. Fruman DATE: 03/06/08

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/07, Expiration date: 06/30/08
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
TO-17 - Markes ATD
LFR Levine-Fricke
Workorder# 0802444

Four TO-17 Tube samples were received on February 22, 2008. The laboratory performed the analysis via modified EPA Method TO-17 using GC/MS in the full scan mode. TO-17 sorbent tubes are thermally desorbed onto a secondary trap. The trap is thermally desorbed to elute the components into the GC/MS system for further separation.

Method modifications taken to run these samples are summarized in the below table. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-17***	***ATL Modifications***
Laboratory Blank	At least 2 tubes from the same cleaning batch as the samples are analyzed at the beginning and end of the analytical sequence. Do not dry purge Lab Blanks.	Tubes used for daily lab blank may or may not be from the same batch or sampling media. Only 1 lab blank is analyzed prior to sample analysis. Lab blanks are dry purged to eliminate the possibility of sample anomaly attributed to dry purge process.
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-17 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

A Temperature Blank was not included with the shipment. Temperature was measured on a representative sample and was not within 4±2 °C. Coolant in the form of blue ice was present. Analysis proceeded.

Analytical Notes

The recovery of surrogate 4-Bromofluorobenzene in sample SG-4 2-18-08 was outside control limits due to high level hydrocarbon matrix interference. Data is reported as qualified.

All the hydrocarbons present in Gasoline range are calculated as TPH-Gasoline.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED METHOD TO-17

Client Sample ID: SG-3 2-18-08

Lab ID#: 0802444-01A

Compound	Rpt. Limit (ng)	Amount (ng)
Toluene	5.0	12
Ethyl Benzene	5.0	21
m,p-Xylene	10	26
TPH ref. to Gasoline (MW=100)	1000	150000

Client Sample ID: SG-4 2-18-08

Lab ID#: 0802444-02A

Compound	Rpt. Limit (ng)	Amount (ng)
Benzene	5.0	41
Toluene	5.0	130
Ethyl Benzene	5.0	280
m,p-Xylene	10	70
o-Xylene	5.0	21
TPH ref. to Gasoline (MW=100)	1000	1100000

Client Sample ID: SG-3 2/19/08

Lab ID#: 0802444-03A

Compound	Rpt. Limit (ng)	Amount (ng)
Toluene	5.0	5.8
TPH ref. to Gasoline (MW=100)	1000	1000 J

Client Sample ID: SG-4 2/19/08

Lab ID#: 0802444-04A

Compound	Rpt. Limit (ng)	Amount (ng)
Toluene	5.0	69
TPH ref. to Gasoline (MW=100)	1000	1400

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SG-3 2-18-08

Lab ID#: 0802444-01A

MODIFIED METHOD TO-17

File Name:	**n030426**	**Date of Collection:**	**2/18/08**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/5/08 04:10 PM**

Compound	Rpt. Limit (ng)	Amount (ng)
Methyl tert-butyl ether	50	Not Detected
Benzene	5.0	Not Detected
Toluene	5.0	12
Ethyl Benzene	5.0	21
m,p-Xylene	10	26
o-Xylene	5.0	Not Detected
Naphthalene	5.0	Not Detected
TPH ref. to Gasoline (MW=100)	1000	150000
TPH ref. to Diesel	1000	Not Detected

Container Type: TO-17 Tube

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
4-Bromofluorobenzene	116	70-130
Naphthalene-d8	94	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SG-4 2-18-08

Lab ID#: 0802444-02A

MODIFIED METHOD TO-17

File Name:	**n030422**	**Date of Collection:**	**2/18/08**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/5/08 12:26 PM**

Compound	Rpt. Limit (ng)	Amount (ng)
Methyl tert-butyl ether	50	Not Detected
Benzene	5.0	41
Toluene	5.0	130
Ethyl Benzene	5.0	280
m,p-Xylene	10	70
o-Xylene	5.0	21
Naphthalene	5.0	Not Detected
TPH ref. to Gasoline (MW=100)	1000	1100000
TPH ref. to Diesel	1000	Not Detected

Q = Exceeds Quality Control limits.

Container Type: TO-17 Tube

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
4-Bromofluorobenzene	371 Q	70-130
Naphthalene-d8	86	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SG-3 2/19/08

Lab ID#: 0802444-03A

MODIFIED METHOD TO-17

File Name:	**n030424**	**Date of Collection:**	**2/19/08**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/5/08 01:39 PM**

Compound	Rpt. Limit (ng)	Amount (ng)
Methyl tert-butyl ether	50	Not Detected
Benzene	5.0	Not Detected
Toluene	5.0	5.8
Ethyl Benzene	5.0	Not Detected
m,p-Xylene	10	Not Detected
o-Xylene	5.0	Not Detected
Naphthalene	5.0	Not Detected
TPH ref. to Gasoline (MW=100)	1000	1000 J
TPH ref. to Diesel	1000	Not Detected

J = Estimated value.

Container Type: TO-17 Tube

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130
Naphthalene-d8	100	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: SG-4 2/19/08

Lab ID#: 0802444-04A

MODIFIED METHOD TO-17

File Name:	**n030423**	**Date of Collection:**	**2/19/08**
Dil. Factor:	**1.00**	**Date of Analysis:**	**3/5/08 01:02 PM**

Compound	Rpt. Limit (ng)	Amount (ng)
Methyl tert-butyl ether	50	Not Detected
Benzene	5.0	Not Detected
Toluene	5.0	69
Ethyl Benzene	5.0	Not Detected
m,p-Xylene	10	Not Detected
o-Xylene	5.0	Not Detected
Naphthalene	5.0	Not Detected
TPH ref. to Gasoline (MW=100)	1000	1400
TPH ref. to Diesel	1000	Not Detected

Container Type: TO-17 Tube

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130
Naphthalene-d8	95	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0802444-05A

MODIFIED METHOD TO-17

File Name:	**n030421**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/5/08 11:09 AM**	

Compound	**Rpt. Limit (ng)**	**Amount (ng)**
Methyl tert-butyl ether	50	Not Detected
Benzene	5.0	Not Detected
Toluene	5.0	Not Detected
Ethyl Benzene	5.0	Not Detected
m,p-Xylene	10	Not Detected
o-Xylene	5.0	Not Detected
Naphthalene	5.0	Not Detected
TPH ref. to Gasoline (MW=100)	1000	Not Detected
TPH ref. to Diesel	1000	Not Detected

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130
Naphthalene-d8	97	70-130

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Client Sample ID: CCV

Lab ID#: 0802444-06A

MODIFIED METHOD TO-17

File Name:	**n030414A**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/5/08 01:50 AM**	

Compound	%Recovery
Methyl tert-butyl ether	98
Benzene	97
Toluene	93
Ethyl Benzene	96
m,p-Xylene	95
o-Xylene	94
Naphthalene	84
TPH ref. to Gasoline (MW=100)	97
TPH ref. to Diesel	96

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
4-Bromofluorobenzene	99	70-130
Naphthalene-d8	99	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0802444-07A

MODIFIED METHOD TO-17

File Name:	**n030420**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/5/08 10:17 AM**	

Compound	%Recovery
Methyl tert-butyl ether	98
Benzene	87
Toluene	91
Ethyl Benzene	88
m,p-Xylene	90
o-Xylene	88
Naphthalene	82
TPH ref. to Gasoline (MW=100)	94
TPH ref. to Diesel	96

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130
Naphthalene-d8	97	70-130

Air Toxics LTD.

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

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Project Manager KATRIN SCHLIEWEN

Collected by: (Print and Sign) Tom Collins

Company LFR Email katrin.schliewen@lfr.com

Address 1900 POWELL ST. 12TH FLOOR City EMERYVILLE State CA Zip 94608

Phone 510-652-4500 Fax 510-652 2246

Project Info:
P.O. # 09480-06
Project # 001-09480-06
Project Name HANSON SUNOL SPARGE

Turn Around Time:
☒ Normal
☐ Rush
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	SG-3 2-18-08		2/18/08	12:34	TO-17				
02A	SG-4 2-18-08		"	13:05	TO-17				
03A	SG-3 2/19/08		2/19/08	15:00	TO-17				
04A	SG-4 2/19/08		2/19/08	16:00	TO-17				

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Tom Collins	2/21/08 8:30	Monica Groppen ATL	2/22/08 8:50
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Fed Ex	901544241660	8.2°C	See Discrepancy	Yes No (None)	0802444

Form 1293 rev.11